THE ART OF RETOUCHING PHOTOGRAPHIC NEGATIVES

AND PRACTICAL DIRECTIONS HOW TO FINISH AND COLOR PHOTOGRAPHIC ENLARGEMENTS, ETC.

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TWELFTH EDITION

Revised and Rewritten

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PREFACE

The first edition of this book on the Art of Retouching was published about twenty years ago and it ran through many editions. It was revised and rewritten by T. S. Bruce and Alfred Braithwaite, both well known experts. Mr. Bruce was for a number of years a most successful teacher of retouching, conducting personal classes in his own studios on Hampstead Heath, as well as correspondence courses in all English speaking countries. He was the inventor and manufacturer of " Negafake " Erasing Pencils, which were very widely used. Mr. Braithwaite ranks high among photographic finishers and is a competent teacher.

Changes in equipment and methods in recent years have made it necessary to bring the book up to date and this is what we have endeavoured to do in the present edition. All of the old material in former editions has been retained with the exception of references to methods and materials that are now no longer used. Bruce's " Negafake," for example, is no longer on the market, but its place has been taken by other things such as brushes of spun glass, and by various reducing pastes, such as Eastman Abrasive Reducer. But the methods of 1930 are much the same as those of 1910 as far as pencil work and etching are concerned. There is as much need for the use of common sense as well as manual skill in retouching now as there was then. There is very little difference in the materials that are now used for negative retouching, except that razor blades are

almost always used for etching instead of the regular etching knives that were used and recommended by Mr. Bruce.

In finishing and colouring photographic prints and enlargements there have been some rather drastic changes. The use of the airbrush has become almost universal owing to its efficiency and speed. Modern methods of colouring have also superseded those advocated by Mr. Braithwaite. These modern methods have been fully dealt with in the present edition, but all of the very sound advice as regards colouring and working up enlargements given in the earlier editions by Mr. Braithwaite has been retained and will be found to be very helpful by those who are contemplating taking up such work.

Merely reading the book will not make anyone a competent retoucher or finisher. The instructions must be actually carried out, for, as Messrs. Bruce and Braithwaite have stated in their introduction, " they are useless without industry."

The present edition is considerably larger than any previous ones. Much new material has been added, as well as a number of new illustrations, and we believe that this book, which has long been regarded as a standard work on retouching, will continue to hold its place and be even more popular.

Any suggestions that may be sent to the publishers as to the improvement of later editions will be welcome.

Boston, 1930

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INTRODUCTION

We do not claim that the following chapters on the subject of negative retouching and working up photographs in colours, monochrome, etc., will make an artist or a retoucher of one who has had no experience in such work, but we are certain that if they are carefully read and the instructions are followed intelligently, a beginner may become possessed in a very short time of a knowledge of those rules which in the ordinary course would take years of practice to acquire, and which go to make up the sum of professional competency. In the present instance they have been obtained in the best photographic establishments in England and in the finish of the finest specimens of photography in those houses, so they may be safely followed by the novice or the weak and defective professional in these branches who has not had the same advantages for practice; but they are useless without industry.

Nothing is easier than to say a piece of work is done badly, but in order to do anything well, it is indispensable that we work until, by constant struggling with a difficulty, we eventually overcome it.

Now, in the first place, before attempting to learn retouching, colouring or finishing we would advise beginners to make sure that they are physically adapted to such work. If the eyes are not strong, it is a great mistake to have anything to do with retouching either as a means of making a living or as a hobby. If you have already taken it up and find that it injures the eyes,

it would be wise to give it up, for no success that may be attained with it will compensate for damaged eyesight. Those who have defective hearing, or those of a nervous temperament but possessing good sight, might find retouching and general photographic finishing a congenial occupation, for the work is restful, the worker is not under constant surveillance, and very little conversation is needed.

The early editions of this book were illustrated with eleven original pencil drawings but in later issues only four of these were retained. These drawings (Plates VIII to XI) were used because they offer more valuable information to the finisher than could be obtained from reproductions of photographs from life. The pencil marks indicate the correct direction of the grain or texture and they serve as examples for monochrome and colour finishing as well as for negative retouching. If similar studies in lighting were made from ordinary photographs taken from life, the direction of the retouching would not show at all in the halftone reproductions. In retouching negatives the pencil strokes must never be made on the same scale or with the strength displayed by the illustrations, for that would be entirely wrong, but the work should be done in the general direction of the pencil strokes seen in the reproductions. The "touch" on the negative must be of the lightest possible character and often microscopic in tbe case of small faces, etc.

T. S. Bruce
Alfred Braithwaite

London, 1913

PART I

Negative Retouching

CHAPTER I

What is Retouching — Why Retouching is Necessary — Soft-Focus Lenses — Lighting — Possibilities of Retouching — Advice as to Materials — Spotting — Causes of Pinholes and Airbells — How to Spot a Negative — Sharpening the Pencils — Cleaning the Pencil — Abuse of Pencilling — Varied Pencil Points — Applying the Medium — Removal of Retouching.

What is Retouching

Adding density to a negative by working on the negative with a finely pointed lead pencil, or removing density from the negative by rubbing with an abrasive mixture or by shaving down the film with a sharp knife, is usually termed retouching, and portrait photographers, since the introduction of the dry plate, have developed and practised such methods of improving their negatives till retouching has become a necessary part of the production of an acceptable portrait.

The methods used in retouching have been modified and improved from time to time and new materials have been introduced, but the operation still remains very much the same as in the days when the dry plate was first used in photography.

Shadows on a negative are more or less transparent, and therefore shadows, such as lines and wrinkles on the face, can be built up and either partly or entirely removed by adding density to the negative in those parts. At first such work as this was done with a brush and colour on each individual print, but this was too labori-

ous, and it was not very long before the idea of modifying the negative was tried out and found to be entirely practical. India ink and water colour were used with a fine brush on the negative, but later it was found that the work could be done far more easily and more satisfactorily with a lead pencil. It is necessary to prepare the surface of the film by applying a resinous medium, to give sufficient " tooth " to make the use of a pencil practical. This used to be done by rubbing the film with finely powdered pumice, but now a retouching medium, or " dope " as it is called, is always used.

Except for the fact that at the present time removable leads are used in a lead-holder instead of the usual cedar-covered pencils, the pencils used for retouching are exactly the same as those used for any other purpose to which a pencil is applied. As the retoucher has to use a long, fine poiut, the adjustahle holder is more convenient because it can be used to protect the lead when the pencil is not in use.

Retouching in its simplest form is simply the application of lead to the surface of a negative in those parts which are not sufficiently dense and which therefore would appear too dark in a print made from that negative. It will be found to be a comparatively simple matter to work over those transparent parts with a finely pointed pencil until they are gradually built up and strengthened under the application of the lead so that they blend, more or less imperceptibly, into the surrounding parts, and are therefore partially or entirely eliminated.

The opposite effect, namely the removal of density from the negative to make certain parts appear darker in the print, is done by gently scraping the surface of the

film with a very sharp knife so that some of the silver deposit is actually shaved off. All kinds of knives have been recommended for this, but most of the practical retouchers of today use a safety-razor blade, or part of a blade, in preference to any other type of knife. There are also certain abrasive mixtures, usually in the form of a paste, which can be applied with a tuft of cotton or with a cloth stretched over the finger tip. For some purposes this method of reducing is better than using a knife. Both knife and paste are used by practical retouchers throughout the world.

It will be seen, therefore, that these are entirely practical means of adding or removing density and it is only necessary for the requisite skill to be developed by practice, so that the modifications of the negative will not be visible on the print.

Why Retouching is Necessary

There are certain defects, inherent to the photographic process, that make it difficult or impossible for a photographer to get in the print just what is desired. It is well known that certain colours are apt to appear in a photograph as lighter or darker in tone than they appear to the eye. Colours at the red end of the spectrum are reproduced too dark, and blue too light. This can be corrected by the use of panchromatic emulsions and suitable colour filters, but it is not always practical to use such methods in the studio and so the necessary modifications are effected by means of retouching. Sometimes there are patches of uneven pigmentation on the skin that are not apparent to the eye, or there are freckles or other slight blemishes that should be subdued or eliminated in order to improve the portrait. These are

more or less transparent on the negative and can very easily be built up by the careful application of pencil work.

The photographic lens is an instrument of great precision, but it does not discriminate between the essential and the unessential, and so when the lens is used in such a way as to give clear definition of detail where it is wanted, there is often equally clear definition of detail where it is not wanted. The lens does not create lines and wrinkles and blemishes on the face, but it merely reproduces them when they are there and makes these unimportant details just as prominent as the important ones. Therefore it is sometimes necessary to subdue such imperfections or to remove them entirely by means of the knife or the pencil.

Soft-focus Lenses

Many photographers use lenses that are so designed that they do not give critically sharp definition, and when used intelligently and skilfully, such lenses often impart a very charming quality, but still, the lens is impartial, and by softening the definition where it is desirable to do so, we soften it also where it is not desirable and so we often lose more than we gain.

Lighting

Sometimes the lighting that is used is such as to emphasize certain lines on the face and sometimes highlights are introduced where they should not be, so that some retouching is called for to correct these mistakes. Sometimes there is a frown or a slight scowl on the face of the sitter which causes certain lines on the face to be unduly pronounced. By softening or removing such

lines, the expression can be very much improved without spoiling the likeness.

Possibilities of Retouching

A very skilful retoucher can make drastic changes in a face, such as closing a mouth that is opened too far so that the teeth are showing, straightening eyes that are slightly crossed or even putting into the negative eyes which may have been closed while the exposure was made. Such things as these demand great skill and should not be attempted until the worker is really expert in the use of his tools, but it is quite possible to do such things and make the results appear entirely natural in the print.

The comparatively slight amount of retouching that is usually called for in a well-lighted and properly exposed portrait is by no means difficult to do, and anyone who possesses a certain amount of manual dexterity as well as good eyesight can become in a comparatively short time sufficiently expert to do simple retouching.

Even if nothing more is done to a negative than to remove the obvious defects and to subdue too prominent lines, that negative will be very much improved and will yield a far more pleasing print than if it were not retouched at all. In professional studios, a good deal more than this is done however; the entire face is blended and modelled so that there are no harsh lines or deep shadows. A clever retoucher can do this without destroying the likeness. The general public often demands a good deal of retouching in portraits, but it should never be overdone or carried so far that all the character and expression in the face are lost. The experienced retoucher will do more with a few strokes of the pencil than

the unintelligent worker could do in an hour, for retouching is a branch of photography in which experience counts for much.

The beginner in retouching must first of all make himself familiar with the appearance of a negative and must get used to the reversal of the lights and darks. When we speak of highlights on a negative, we mean the densest parts of it, the parts that appear lightest in a print, and of course shadows on a negative are the more or less transparent parts through which the light can penetrate in printing so that those parts appear dark in the print. It takes a little practice to discriminate between the shadows that are blemishes, such as freckles, etc., and those that are a necessary part of the modelling of the face. There must be a certain amount of shadow in order to give a suggestion of roundness and solidity and to indicate the shape of the features. A little actual work on a few negatives will soon enable the beginner to tell the difference between the shadows that should be removed and those that should not be touched and so, at this time, we will proceed to give the beginner some idea of his tools.

Advice as to Materials

After having made sure that you are physically suited for retouching, proceed to get the implements that are required. These are not expensive and it is always advisable to get the best. Although it is possible to use ordinary cedar pencils, it will be far better for the beginner to buy one or two of the lead-holders specially intended for retouching, and an assortment of loose leads of varying degrees of hardness. The different makers have different ways of indicating hard and soft

leads. Some of the leads are numbered, No. 1 being the softest and No. 6 extra hard. Other makers indicate the quality of the leads by the letters B (black) and H (hard), the No. 1 lead being marked BB or BBB, No. 2, B or BB, No. 3, HB (hard and black, the degree of hardness that is generally most useful for average work) No. 4, H or HH, No. 5 HH or HHH and No. 6 HHH or HHHH, and so on. The worker must have two or three pencils of different degrees of hardness for use on different kinds of negatives or on different parts of the same negative. On a thin negative, where only a very slight amount of pencil work is needed, a fairly hard pencil should be used, while, on a denser negative or on parts where a heavier deposit of lead is called for, a soft pencil must be used or it will be impossible to apply sufficient lead. This is largely a matter of practice and the worker will very soon acquire the ability to decide which grade of lead is best suited to different parts of the negative.

It is possible to make the retouching medium or "dope" that is applied to the negative to provide a "tooth" for the pencil work, but it will be found far more satisfactory and just as economical to buy this ready prepared. Besides the pencils and retouching "dope," the following articles should also be obtained:

Retouching desk or easel
Reading glass or magnifying glass
Etching knife or a few razor blades
Small spotting brush
Assortment of spotting-colours, sepia, black and white
Small can of abrasive paste
Glass paper block for sharpening pencils

Bottle of " Ground Glass Substitute "
Some old, soft handkerchiefs for applying the dope to the negatives
Some negatives to practise on (*which possibly could* be obtained from a friendly local photographer)

It is not at all difficult for anyone who is handy with tools to make a thoroughly practical and efficient retouching desk. As a matter of fact, a " sugar box " with the top and bottom removed and a board put in diagonally at an angle of about 60 degrees, to act as a support for the negative, will do very well. An opening must be cut in this board through which the light can be transmitted. A second-hand radio cabinet of the old style with sloping front can easily be adapted to this use. An adjustable and folding retouching desk can be purchased for a few dollars and if much work is to be done, it will be found to be well worth while to invest a little money in a reliable outfit. Do not get a desk that is too small. A large desk is well worth its extra cost in the added comfort and convenience.

The reading glass should not be used all the time, but it will be found very handy for extra fine work and for the final smoothing up of the work.

Although there are many good knives on the market that are specially designed and manufactured for retouching, most of the practical retouchers of today use a safety-razor blade, preferably one with a rounded corner rather than a sharp corner. Very often the practical retoucher either breaks a blade in two so that he has one sharp corner and one rounded one, or he uses different makes of blades. This gives a choice of blades which are used according to the kind of work that is needed.

The spotting-colours and brush are used for spotting out pinholes and similar defects in the negative that are too big to be easily remedied with the pencil. There is a knack in spotting that can very easily be learned.

Spotting

Transparent spots on a negative, though they are usually caused by carelessness, cannot always be avoided. They are sometimes caused by dust particles on the film which keep the light off the film when the exposure is made and therefore when the negative is developed there are transparent spots where there was no light action. Such spots as these are known as pinholes and they can be avoided by making sure that the plate or film is free from dust. The use of a brush for dusting plates or films when they are loaded into the holders is not advised. Plates and films are very carefully packed and elaborate precautions are taken at the factory to avoid dust, so there is not likely to be any dust on the film when it is taken from the box in which it was packed, but a brush that is kept in the darkroom, possibly lying on a dusty bench, is likely to be full of dust and the use of such a brush would be very apt to put more dust on the film than it removes. In loading glass plates into the holders, it is a good plan to give the edge of each plate a slight tap on the bench before putting it into the holder. That will dislodge any dust particles there may be on the plate. If films are used, tap the back of each one with the finger nail before loading into the holder.

Another reason why a brush should not be used is that the friction of the brush on the plate or film tends to electrify the surface a little, so that any dust that is in the atmosphere is attracted to the plate and adheres

to its surface. So do not use a brush for dusting plates or films, but take special care to keep the inside of the camera and the holders as free from dust as possible.

Causes of Pinholes and Airbells

Plates and films are apt to get dusty if they are left for some time in the holders and are carried around a good deal in an auto or other conveyance. It is a good plan to dust the inside of the camera and the inside of the holders occasionally with a slightly damp cloth or one that has been very slightly moistened with just a trace of glycerine. This should be done after the camera has been carried on a long trip in a train or auto, especially in dry weather when the roads are dusty. It is also well to avoid leaving the plates or films in the holders for a long time before they are used.

Defects of another kind will sometimes be found on negatives. They are usually larger than pinholes and are almost always circular in shape as they are caused by airbells adhering to the film during development. Carelessness in pouring on the developing solution is usually the cause of airbells. The developer does not reach the spot covered with the air and therefore that spot is not developed and will fix out in the hypo as a round, transparent hole. If the films or plates are developed in a tray, airbells can be avoided by passing a wad of cotton, or the tip of the finger, very lightly over the entire surface of the film immediately after it has been immersed in the developer.

How to Spot a Negative

Such spots as these, if they should occur, are best spotted out with a fine brush and either opaque colour or

india ink. The colour should not be applied too wet or it will only form a ring around the transparent spot and make matters worse. The usual method is to take a little of the colour or india ink on the thumb nail and allow it to dry. The brush should then be very slightly moistened with the lips and a very little of the paint taken up on the extreme point of the brush. Then apply the tip of the brush to the spot on the negative, being very careful to place the tip of the brush as nearly in the exact centre of the hole as possible, and if the pinhole is a small one, it will be removed with one touch of the brush. If it is a large hole, two or three such touches may be necessary, but be careful to avoid putting on the colour too thick. Try to apply the colour so that the pinhole or air-bell will match its surroundings and so blend into the negative that it will not show at all in the print. If the pinhole is in a dense part of the negative, such as the sky in a landscape picture, it will need a heavier application of colour than if it is in a more transparent part of the negative. If the pinhole is in a part of the negative that is more or less transparent, it would be better to retouch it very lightly with a hard retouching pencil instead of using paint and a brush. If the paint is applied too heavily, the spotting will show as a light spot in the print and will entail some spotting on each print to remove it. The knack of spotting such defects in negatives is one that can be acquired very easily with a little practice. A very convenient assortment of spotting-colours in the form of a series of celluloid sheets coated with dry colours, black, white, and red, can be purchased very cheaply at any photographic stock house.

The glass paper block for sharpening pencils can be bought of almost any artists' supply store or photo-

graphic dealer. It is a piece of wood about an inch and a half wide and six inches long, to which are attached several pieces of fine glass paper, one on the top of the other. When one piece is worn out, it can be removed and a fresh piece exposed for use.

Sharpening the Pencils

As a great deal depends upon the sharpening of the pencils and the preservation of the point, it may be advisable to give full directions to achieve those ends. The lead should be let out about an inch and a quarter from the screw-cap of the pencil holder and then this securely tightened. The pencil is then lifted from the table between the thumb and second finger of the right hand, which makes the butt end of the holder protrude just beyond the side of the hand below the little finger, the pencil holder thus crossing the palm of the hand, with the little and third fingers bent under the holder and lightly supporting it while the weight of the first finger tip is resting on the extreme unsharpened point of the lead. Hold the sharpening block in the left hand or place it just on the edge of the table and bring the pencil down on it at an angle of about forty-five degrees, resting the lead perfectly flat across the glass paper. Then pass the lead across the surface of the glass paper with a bold and steady motion from right to left, at the same time rotating the holder continuously between the second finger and the thumb. This double movement requires some practice, but by doing it slowly at first, it will soon be mastered. The tip of the first finger should rest lightly on the end of the lead until it begins to find its point through the light pressure and then the tip of the finger should be gradually drawn down towards the

screw-cap of the holder until the pencil is finely sharpened to a taper point, not bulging in the centre, then suddenly slanting off, but a true gradation from the screw-cap to the delicate tip, as shown in Fig. 1, No. 1. The pencil must always be kept in this condition and if little pieces break off, as they are apt to do with the beginner, and with irritating frequency, then loosen the screw-cap, let out the lead a trifle, screw up again and repeat the sharpening process as described and so renew the point. Keep the point always the same length and be very careful to protect the points of the pencils when they are not in use.

Cleaning the Pencil

After sharpening, many retouchers remove the fine dust clinging to the pencil by drawing it through a soft cloth. Some use a piece of blotting paper or soft wrapping paper, passing the lead over the paper in the same way as it was rubbed on the glass paper block, but the best method of removing dust from the newly sharpened pencil is to rotate it over the soft flesh between the thumb and the first finger of the left hand while drawing it over and away from that part. This certainly dirties the hand, but then, so does the sharpening, but the proper pursuit of the art comes before all such slight considerations. Retouchers get into a very smudgy state at times and the nature of the work makes it unavoidable.

The lead must be cleaned after sharpening, because there is usually a speck or two at the point which would be deposited on the negative directly the pencil is brought to its surface. This would make a speck on the negative that would have to be removed either with a

ɛnife or with the wooden end of a small paint brush han-
ille covered with a soft rag and lightly touched with re-
:ouching medium. This should be just flirted over the
surface and it will usually remove the speck of dust at
once, but it may be necessary to rub the medium down
on the negative.

First attempts at sharpening the leads generally re-
sult in many breakages, and the novice thinks he has
taken up an expensive hobby. The tip of the first finger
resting on the point of the lead when being sharpened
prevents much of this wastage, but undue weight from
he wrist must always be guarded against. To attain
he correct rotary movement of the pencil between the
inger and the thumb, the beginner can practice on the
back of a piece of glass paper, or on any smooth paper,
until the knack of performing the double movement is
acquired. Then, when confident that the right action
has been attained, the complete operation can take
place.

Careful attention to the sharpening and treatment of
he pencils will remove many of the initial difficulties
hat beset the path of the beginner, hence the necessity
or these somewhat detailed directions.

Abuse of Pencilling

While you must keep a long, sharp point on your
pencil, you can use a more stumpy point for strengthen-
ng highlights on drapery, but here is something that
should be avoided: it often happens that it is difficult
to strengthen the highlights on a figure owing to the
drapery being of soft material, but in the picture there
may be certain accessories, such as chairs, screens, vases,
books, etc., which catch the light; and because it is easy

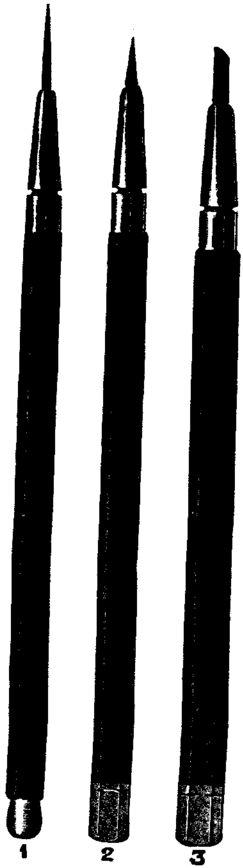


FIG. 1

to do so, some retouchers strengthen these highlights wherever they can, so that the figure appears to be lost in a number of brilliant accessories, just as some indifferent pianists, when they are accompanying a solo, hammer away at the instrument as if the accompaniment constituted the leading motive of the music. Do not let your zeal for retouchiug carry you to this extreme; within its proper limits, retouching can be a vast improvement to a photograph — beyond that it is an obtrusive absurdity.

Varied Pencil Points

Fig. 1, No. 1, shows the proper working point of a No. 3 Hardtmuth lead (a favourite professional pencil) $1\frac{1}{8}$ to $1\frac{1}{4}$ inches in length: No. 2 shows the point of a No. 3B pencil, about $\frac{1}{2}$ inch in length, used for strengthening the highlights on drapery, etc.; and No. 3 shows a chisel-pointed 6B pencil, the softest pencil made, used for putting in broad highlights.

The desk and the pencils being ready, nothing remains but to apply the retouching medium to the negative and then, in the correct position and with the right movement, to commence work.

Applying the Medium

Whatever retouching medium is used, and there are many varieties on the market, it will be found that directions as to their use are usually given with them.

In applying the medium to the film — and this applies to all makes — the main thing to avoid is having the medium too thick so that it leaves the film in a sticky condition, more fit for catching flies than for retouching. The first finger of the right hand should be covered

smoothly with a piece of soft rag, such as an old and well washed handkerchief. Tip the bottle so that the medium touches the cork and then withdraw the cork and apply the medium that is adhering to the cork to the cloth on the finger tip. This should then be rubbed firmly over the part of the negative that is to be retouched, rubbing with a little pressure and in a series of circles cutting one another. The medium should be applied to the parts that need to be retouched and the edges should be softened off, so that there is no abrupt edge where the medium stops, as this might show in a print. The negative should be placed on a level surface while the medium is being rubbed on and if it is a glass plate, some care must be taken to avoid breakage.

Do not apply too much medium. Rub it down smoothly. Use only a very little and then rub it well in, as if you were trying to rub it off.

Removal of Retouching

Unsatisfactory attempts at retouching may be removed with the finger rag slightly moistened with spirits of turpentine (the best), and then the negative is remediumized with the regular retouching medium for another trial. There is no need to remove all the work, unless all of it is unsatisfactory, but only the part that has to be done over.

Retouching can also be removed with the medium itself. A second application of retouching medium right over the part that has been worked on will remove the old retouching and prepare the surface of the negative for another attempt.

CHAPTER II

Setting the Desk for Daylight Work — Use of Window Shades — To Shut Out Side Light — Working by Artificial Light — The Dimming Switch — Position at Desk — Distance from the Negative — Holding the Pencil — Knife and Abrasive Work — How to Hold the Knife — Sharpening Knives — Negafake Work — Abrasive Pastes — Example of Knife and Abrasive Work — Double Working — Practice Negatives — What to Look for — What Stroke to Use — How to Avoid Eye Strain — Blending.

SETTING THE DESK FOR DAYLIGHT WORK

And now let us suppose that you are ready to commence work. Choose a north light if possible, as it is the least variable, or, failing that, a north-east light, but always avoid sunlight. Use a strong and solid, straight-edged table, such as an ordinary kitchen table, placing it close up against the wall just below the window, so that it is firm and unshakable.

Set the desk right up to the edge of the table and do not allow any ledge on which to rest the elbow, for if you do that you will retard the free action of the pencil all the time. Allow sufficient room on the table at the right of the desk for all your materials, extra pencils, knives, brushes, spotting-colours, and so on.

Open the retouching desk with the carrier or other device that holds the negative at an angle of about 60 degrees, for to have too great a slant compels the retoucher to lean over the work more than is necessary, which is bad for the health and is a very tiring position.

It is advisable to have a really first class desk and one that is a fairly good size. It should be large enough to take a negative 11 by 14 inches in size. A good, large desk is a real comfort to work at and it well repays the initial expense, for after a proper outfit has been acquired, the cost of retouching is very little, for the pencils, medium and other things will last a long time. Therefore if much work is to be done, a good, roomy, well made desk will be a good investment.

Many desks are fitted with a mirror to reflect the light through the negative, but this should be used only when the light is very poor. To work with too strong a light is detrimental to the eyesight and fatal to good results. From practical experience it has been found that white blotting paper is about the best material to use as a reflector. It throws a good, even light through the negative and there is no glare. There should be a piece of opal glass or fine ground glass fitted behind the opening in the desk, on which the negative is placed, and then the white blotting paper should be laid below the ground or opal glass in sueh a position that it throws an even, diffused light through the negative.

Use of Window Shades

You will find that you can easily regulate the amount of the light that falls on the reflector and so make it suit exactly the density of the negative you have to work on, by raising and lowering the window shade. If you have the cord within easy reach, you can raise or lower the shade when it is necessary to do so without leaving your seat. If you have to work at a window on the sunny side of the house, you can diffuse the light by using a white shade, preferably one that is so arranged

that it can be pulled up from the bottom of the window, with a dark shade also that can be pulled down from the top.

A soft, reflected light must always be used, one that is not too strong to obliterate the delicate gradations in the negative, but strong enough to show all the detail clearly. If the light is too strong it will be impossible to do good work, but a light that is not strong enough will be apt to strain the eyes. This is a point that should be carefully observed. You will soon get into the habit of adjusting the window shade so that you will get the best possible light.

To Shut Out Side Light

Some workers tack pieces of brown paper along each side of the top of the desk and then down each side of the carrier frame, but a better plan is to use a piece of heavy cardboard or thin wood about two or three inches wider than the top of the desk. Side curtains can be attached to this and it can be laid on the top of the desk with a strip of wood in front to keep it from slipping down. In this way you can block out all the side light and the whole thing can be lifted off easily when it is not needed.

Working by Artificial Light

A great many professional retouchers use only artificial light for retouching. It has the advantage of being always uniform. Electric light is now so universally obtainable that it will be rare indeed when any other form of artificial light will have to be used.

An oil lamp, used with the addition of a jeweller's globe filled with water tinted blue-green, makes a good

substitute for electric light and provides a very pleasant light to work by in the event of electric light being unobtainable, but as the majority of our readers will no doubt be in a position to use electric light, we will give some details as to its most effective use for retouching.

Probably the most convenient method is to use a goose-neck desk lamp and place it so that the light shines down on to the white blotting paper reflector previously described, so that only reflected light is used to pass through the negative, not direct light. The intensity of the illumination can easily be controlled by varying the distance between the electric lamp and the reflector. The nearer it is placed to the reflector, the stronger will be the light. Some workers use direct light diffused with two pieces of opal or ground glass, but we have found, from actual experience, that the reflected light gives a more even illumination that can very easily be regulated.

The Dimming Switch

A " dimming switch " by means of which the strength of the light can be varied is a great convenience if negatives of widely varying density have to be retouched. Such a switch can be obtained at any electric supply house.

If an exceptionally dense negative is being worked on, too dense to allow the light to properly penetrate even when the light is brought fairly close to the reflector, one of the ground glass diffusers can be removed, or even, in extreme cases, both of them. Such exceptionally dense negatives should be avoided whenever it is possible to do so, as they are not at all easy to retouch. For the average negative, of average density, an ordi-

nary 50-watt lamp can be used and the light will be just about right with one opal or two ground glass diffusers and the blotting paper reflector. The light can be increased a little, if necessary, by raising the blotting paper reflector, so that it is a little nearer to the negative, as shown in Plate I.

If an exceptionally thin negative is being worked on, it may be necessary to use an additional opal diffuser between the negative and the light. This will add density and show the delicate detail more clearly.

Position at Desk

The illustrations, Plate I and Plate II, show side views of the retoucher sitting at the desk for both day and night work. This is the position that should always be adopted. Plate III shows the desk fitted with a side cloth to shut out all the side-light, prepared and made removable as above described.

The position adopted when retouching is of the utmost importance if the work is to be carried on for many hours, as in the case of professional retouchers, and even if only for a short period it is better to be in comfort than not. Sit in an upright chair with a cushion at your back for ease combined with solidity of position (see Plate I), and then, placing your hands under the seat of the chair, lift or jump yourself forward so that your legs are well under the table and your body just lightly touching the edge of it. You will then be sitting erect all the time you are at work, and your back being so well supported by the cushion, you can work for hours at a time without suffering the slightest fatigue. If you do not get well up to the table, then you are tempted to lean over, and the whole time you are retouching you

are in a strained and uncomfortable position that is positively bad for the health.

Distance from the Negative

You should look down upon the face to be retouched, and the distance your eyes should be from the work depends entirely upon your own particular vision. Some retouchers have to peer closely into the negative, others can see better when they keep away some considerable distance. The ordinary reading range is usually about right for retouching, and the larger the head you are working, the farther away you can keep from it. It is usually best to keep well away from the work and not look too closely at it except, possibly, for working on very fine detail. By keeping away from the work you will find it much easier to attain breadth and smoothness.

If you are using a desk in which there are openings of different sizes to accommodate different sized negatives, you will find it is best to use a mask of black or heavy brown paper with a small oval opening, about two inches by three, cut in it and laid over the negative, exposing only the part to be worked on through the small opening. This will not only serve to protect the negative from possible injury through contact with the hand, but it will also rest the eyes and keep the light that is passing through the negative from being so strong and dazzling as to obliterate delicate gradations and detail.

Holding the Pencil

The pencil should be held naturally, in much the same way as you would hold it for writing, with the fingers near the screw cap of the holder and not too far away from the point. The pencil must be held very lightly.

Work on the side of the point rather than the extreme tip with about as much slant to the pencil as in ordinary writing. If you use the extreme tip of the point and work with the pencil too much upright, the result will he apt to be scratchy and the work will be slow.

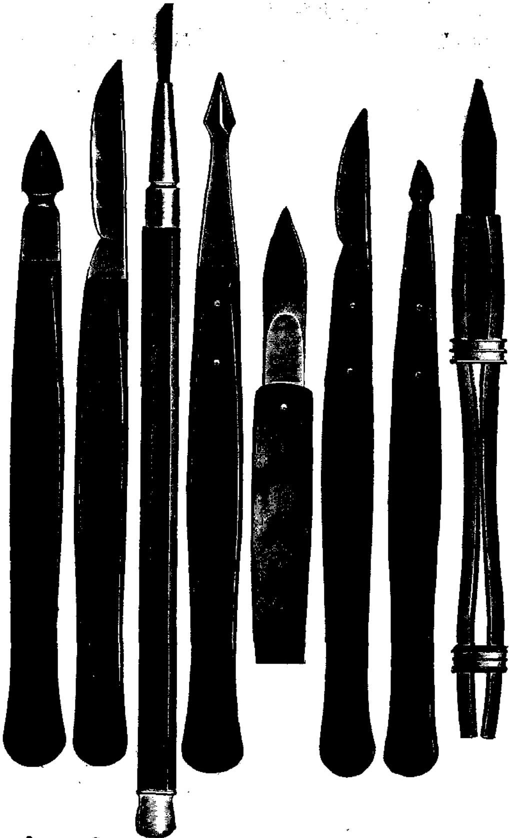
Knife and Abrasive Work

In the retouching of all negatives, knife work or any reduction of density by means of abrasive methods should always be done first if anything of the sort has to be done. The film must be absolutely dry before any work on it with a knife is attempted. In damp weather it may be necessary to warm the negative over a stove or radiator to be sure that it is entirely free from moisture.

Pencil work follows the knife work and sometimes it is necessary to touch up the knife work a little with the pencil after the negative has been " doped." Then, if there is any spotting to be done or any work with a brush, that should come next.

It will be found that the majority of negatives need only pencil work and on many of them only a very little work of any kind. Knife work should never be done just for the sake of experimenting, but should be used judiciously and only when it is really needed. If the developing, fixing and washing of the negative have been done carefully there should be very little need for spotting.

There are a good many varieties of high grade etching knives on the market and all of them are good and are capable of giving excellent results when used skilfully and intelligently. Fig. 2 shows seven typical etching knives, all of which have their special uses. No.



1 2 3 4 5 6 7 8

3 is made to fit into the ordinary lead-holder and is a very handy little accessory. Although there are a great many retouchers who prefer to use knives like those illustrated, many of the present day practical workers find that a safety-razor blade is just as effective and in some respects is better than a knife because, when new, it is really sharp and because it is possible to do with a razor blade everything that can be done with a knife, from the etching of a fine line to the entire removal of the background.

How to Hold the Knife

Most of the knives illustrated would be held in much the same way as you would hold a pen or a pencil and the edge of the blade should be nearly at right angles to the surface of the film. As each retoucher, in time, acquires his own " touch " with the pencil, so he will get into different ways of holding and using the knives effectively. Slavish copying of another's methods, either from ocular demonstration or through the medium of books, is not at all desirable. The art student at first imitates the technique and colour schemes of the different masters in the great galleries of the world, but gradually breaks away and finds his own inspiration and goal — if not, he remains a copyist only. So, in retouching, the student should try to be original; he should try different methods and then select the ones that he finds are best suited to him.

Some of these knives can be used more effectively if they are held with the handle passing right under the palm of the hand and the blade held between the thumb and the first and second fingers. They may be held in such a way that the soft edge of the thumb and the tip

of the first finger are actually touching the surface of the film when the sharp edge of the knife is used in very much the same way as a carpenter's plane, scraping gently and evenly, a very little at a time, on the part of the film that is to be reduced in density. It will be found that the worker has considerable control over the knife when it is held in this way.

This is the way, too, in which a razor blade should be held, if a blade is used instead of a retouching knife. Or, perhaps, it would be better to say that this is the way the present writer has found to be the most effective after many years of such work with razor blades of all kinds. Other workers may find other ways more suitable, and if so, each one should work in the way that he finds is best.

Sharpening Knives

Needless to say, good work can be done only with a knife that is absolutely sharp, and so it will be necessary either to sharpen the knives yourself or to have them sharpened frequently by one who really knows how to do it. A carborundum stone is usually found to be the best for obtaining the very keen edge that is needed on these knives. The stone should be oiled with a few drops of machine oil and the knife should be held between the thumb and first and second fingers, with the handle under the palm of the hand and with the blade flat on the surface of the stone. The blade should then be passed lightly but firmly over the stone in sweeping, curved strokes from heel to point and "against the edge" from left to right. Then turn the blade so that the other side of the edge is on the stone.

To sharpen a knife properly is a job for an expert.

Many people find it difficult to do a really satisfactory job. The use of razor blades instead of regular retouching knives will do away with all need for sharpening because, when the razor blade gets too dull, it is easy enough to replace it with a new one. But for such work as the average retoucher will need, it will be found that a razor blade will hold its edge for a very long time.

There are on the market a number of holders for razor blades and for those who prefer a knife with a handle, one of these holders will be found very handy. The photographer has to a slight extent solved the problem of what to do with old razor blades, for even a blade that is no longer keen enough to be used for shaving can be used for a wide variety of photographic purposes besides negative etching.

"Negafake" Work

The "Negafake Erasing Pencil" invented and put on the market by Mr. T. S. Bruce of London was a great boon to photographers who found some difficulty in using a knife successfully. This consisted of a square stick of an abrasive material which could be sharpened with a knife to a rather blunt and rounded point, which was used to rub down the film where it was too dense. The pencils were made in two degrees of hardness and were used with a lubricating medium. Even when used with some force, the pencils would never scratch the negative, but just rubbed away the density gently and gradually until the film had been sufficiently reduced. Unfortunately, since Mr. Bruce's death, "Negafake" pencils are not being made and are no longer obtainable, but any reader of this book who is interested might like to experiment along these lines and make up a similar

article. The pencil was presumably made up of an extremely fine abrasive, such as carborundum powder in a fine state of precipitation, thoroughly stirred into melted paraffin wax and then poured into moulds. A suitable mould might be made by wrapping stiff paper around a pencil and then, after closing up one end, pouring in the melted paraffin and carborundum powder.

Abrasive Pastes

There are abrasive mixtures to be had, such as Eastman Abrasive Medium, which is in the form of a thick paste which probably consists of a fine abrasive powder mixed with a heavy grease. They are used to reduce the negative by friction. They may be applied by means of a piece of cloth wrapped around the finger tip, or by means of a wad of cotton. They are particularly useful for fairly large areas that need to be reduced in density and, when used on a small wad of cotton wrapped around the end of a small stick, can be used effectively for reducing small highlights that may be too prominent, such as are sometimes found on the breastbones of ladies in evening dress, or for introducing halftones and shadows where they may be needed. Even the expert user of the knife can find many occasions where such a method of reducing is preferable to a blade.

Example of Knife and Abrasive Work

Plates IV and V show an example of what can be done with the knife and other methods of reducing. This negative was taken and made for "alterations and repairs." The sitter was specially spotted and freckled with paint to damage his damask cheek, the cigarette

was placed between his lips for ultimate removal, one eyelid was slightly closed and the other was naturally drawn down — the result of an illness. The sitter, after seeing the partly retouched negative, thought a slice off each cheek would make him look more romantic, that balance in the eyes would give him a straighter outlook on life and that the finger mixed up with his ear might be amputated to complete the surgical operation. Being against a dark background, the finger presented a better and quicker job for the knife than for an abrasive paste, and it was carefully etched away.

The cigarette was " consumed " partly by abrasion and partly with the knife. The eyelids were balanced by the same means. The line between the lips and the line of the upper lip, which had been raised when the cigarette was held there, were also corrected. The nose was thinned at the top, and a piece was worked off each side of the jawbone to complete the modifications. As the removal of the finger left the hand rather too straight from the knuckles to the finger joints, a portion of a first finger was pencilled in to break the line.

The burned end of the cigarette against the white collar called for the application of lead pencil. A part like this that needs a lot of work may have to be " double worked."

Double Working

When the negative is on a glass plate, it is double worked by retouching first in the usual way and then, when as much lead as possible has been applied and the film has become too smooth to take any more, flowing the negative with a clear, hard varnish and then retouching further on the varnish. When films are used instead of

glass plates, the retouching can be done on both sides of the film, if it is not possible to apply sufficient lead on one side.

These few operations show what can be done by the skilful use of a knife and an abrasive paste and there are many other similar uses for these useful tools.

Practice Negatives

The negatives selected for your first attempts at retouching should, if possible, be sharply focused portrait negatives, preferably of coarse-featured subjects with a few — but not too many — freckles. It would be a good plan, if you can do so, to select a few subjects of this kind and make a number of negatives for retouching practice. They must be fully exposed and properly developed. Should you not be in a position to make such negatives yourself, discarded portrait negatives can often be obtained from a local photographer. When selecting negatives for practice work, it is best to begin with a head that is of a fair size, one that measures about three or four inches from the chin to the top of the head, and of a subject with blemishes on the face, such as freckles, as the beginner will be able to observe his progress more readily on a negative of this sort than on one with few imperfections.

It is always a good plan for a beginner to make a print of the negative before doing any work on it, one that is fully printed to a good depth, so that all the imperfections show clearly. This may be either a proof on printing-out-paper or a finished print on D. O. P. By comparing this print with another one made from the negative after it has been retouched, the effect of the retouching can be clearly seen and appreciated. Some-

times, too, a beginner finds a print helpful to refer to in order to make sure which of the transparent portions of the negative should be filled in, and which are shadows that are needed to show the modelling or the shape of the features.

What to Look For

To begin with, it is advisable to select a large freckle or other blemish, and by working over it with the pencil, try to break it up and obliterate it. The spots and blemishes on the face, being of different shapes and sizes and of different degrees of transparency, will require different strokes of the pencil. Some may require a series of straight or slightly curved lines placed close together or crossing one another. Some small blemishes may be removed by using two or three small comma-shaped marks. Different workers have different ways of applying the pencil and there is no advantage in using one particular kind of stroke instead of some other kind. Whatever stroke you use, it must be such that you cannot see it when the negative is held against the light, nor must the stroke be definite in a print from the negative. Three or four light touches will often make the average freckle entirely unnoticeable. Always be very careful not to do too much and get too much lead on the negative. Try to remove the imperfection completely, using as few strokes as possible. The weight of the stroke will govern this to a great extent.

What Stroke to Use

Do not worry too much about what stroke you ought to use. Use any stroke that seems to you to be best fitted for the particular spot you are working on. It

does not matter how the retouching is done so long as you succeed in filling in and obliterating the blemishes so that they merge and blend into the surrounding areas and there is no indication of any pencil work. Some blemishes may need only a touch of the pencil point, others may require a little gentle stippling with dots, with zig-zag lines, minute " figure eight " strokes of the pencil, or a mixture of several strokes, before they disappear. When the blemish is properly treated, neither the blemish nor the strokes used in obliterating it should be seen.

Try to do just as little as possible. Too little is better than too much, and the usual tendency is for a beginner to do too much at first. When you have removed one blemish, pick out another and work on that, using any stroke that seems best. By using all kinds of different strokes, such as parallel lines, cross hatching, comma-like marks, " figure eights," and so on, you will soon find out whether you have any decided preference for aud success with any particular one of them, and you will soon adopt, unconsciously, the methods best suited to you. It is better to work in this way than to try to copy some particular stroke used by someone else or one that has been described to you. Try several strokes and select the ones you like best.

One important thing you must always keep in mind, and that is — never to let the pencil point touch any part of the film where no application of the lead is needed. In filling in a freckle, keep the pencil point away from the edges or you will only make matters worse. The lead is to be applied only to those parts where there is insufficient density. Work from the centre of a freckle or other blemish, filling in just up to the

edges but being careful not to go over the edges. If the transparent spot is irregularly shaped, follow the shape with the pencil point. Go into all the corners but be careful not to darken the surrounding parts. When you have finished one spot, take another and continue to fill in the obvious blemishes till they have all been removed. They will not be all of the same density; some will be more transparent than others, and they will need different treatment. The less pronounced the blemish, the lighter must be the application of the lead.

After cleaning up the most conspicuous spots as carefully and as completely as possible, sit back from the work and take a general view of the whole surface of the face. You will probably find that there are patches of uneven density on the face and though you have worked out the small transparent spots, you still have some blotches and patches.

The evening up of these blotches and patches of varying density is what is known as blending. It should be done by sitting well back from the negative so that you get a general and comprehensive view of the entire face, and using a longer and lighter stroke of the pencil, working very lightly between the patches till they are merged and blended together and the surface appears to be smooth and even.

The subject of blending will be taken up in greater detail later. On your first attempt you will probably not do more than fill in some of the blemishes, and you should work at this until you have acquired some dexterity before going on to more advanced work. If you find on your first attempt or two that you are putting on too much lead, do not be discouraged. That is a very

frequent mistake that is made by beginners. The best thing to do is to rub on a little more retouching medium — erasing what you have done — and start over again.

It is best to begin with the blemishes in the denser parts of the negative and, after they are removed, go on to those that are in the halftones and shadows. In the thinner parts of the negatives your strokes must, of course, be much lighter, and it may be necessary in the light parts to use a harder lead. If you find that the lead is being applied too heavily and that the strokes show too much, use a harder lead. If, on the other hand, you find that after working over a transparent part it does not gradually become filled in, the lead may be too hard and you had better try a softer lead. You will soon learn how to adapt the grade of lead to the work that you want to do. As a rule, a medium lead should be used, except for very dense or very transparent parts of the negative.

After you have removed the prominent blemishes, it would be a good plan to make another print and compare it with the one that you made before starting work. You will notice considerable improvement, but you may find that still more work is needed to remove some of the blemishes so that they do not show at all. If so, do a little more work on the negative until that part of it appears more even.

Only by careful practice and repeated trials can you thoroughly master this elementary part of retouching. This is the important stage of the work, and when you have gained enough experience to be thoroughly familiar with the removal of blemishes in the most effective way and with the least possible number of strokes, you

will have advanced a long way and will find the subsequent steps comparatively easy.

How to Avoid Eye Strain

If you find that your eyes become tired after you have been retouching for a little while, it may be because you are straining your eyes in the effort to see the imperfections. Do not peer too closely at the negative. Sit back and work in as easy and as comfortable a position as possible and in a leisurely manner. Do not try to do too much at first. Be sure, too, that the light coming through tbe opening in the desk is of the right strength, for if it is either too strong or too weak it will be apt to cause some eye strain. The light should be just strong enough so that you can see all the delicate gradations in the negative and detail in the shadows as well as in the highlights. Be careful not to have any light falling on the negative from behind you or from the side. The only light should be that which is transmitted through the negative. Light striking directly on the negative will tend to obliterate detail and cause eye strain.

Be careful not to have your chair too far from the desk so that you have to lean over the work. A leaning position soon becomes tiresome. If your fingers become cramped from holding the pencil, it may be that you are holding it too tightly. Always hold the pencil loosely and try to use it in a free and easy manner. Cultivate a natural and easy position, sitting upright and avoiding any position of the hand or arm that is not perfectly natural and easy.

Blending

As we have mentioned before, the work you have been doing in filling in and removing blemishes will make it

easier for you to see another defect in the negative that will become more or less visible as soon as the obvious defects have been cleaned up. There will be an unevenness and, in some cases, blotchy appearance, and it is the connecting and linking up of these blotches and uneven patches that is known as blending.

In blending you should sit well back from the negative so that you get a broad and comprehensive view of the negative instead of closely peering into fine details. Hold the pencil loosely and work with a very light but sweeping stroke between the uneven patches, until they blend and merge imperceptibly into each other. As a rule, only a very little pencil work will be needed, but it must be in just the right place.

As when removing defects, it is best to start the blending in the denser parts of the negative and work steadily through to the more transparent parts. As the forehead in a portrait negative is usually the most strongly lighted part, it is usual to start with the forehead and work gradually down. It is only after the conspicuous blemishes have been eliminated that the unevenness or patchiness can be seen and, of course, it varies in different negatives.

The actual work in blending is not at all difficult. The only precaution to take is to avoid working too heavily; the blending must be done very lightly and with a free and flowing stroke. By working lightly and freely in the lighter parts between the denser patches, you will link them together and get a more even texture on the face. Do not be afraid of making mistakes; confidence can be acquired only by working firmly. Experiment if you like by trying different strokes, for the right method — that is to say, the method that suits you

best — can be found only by experiment. After some little practice you will find that you can apply just the right amount of lead and in the right places to produce the desired results. You will find that often only a very little work is needed to get rid of the patchiness. You may even be surprised to find how little work is called for. *In all retouching you should try to get the desired effect with the least possible amount of work.*

After you have blended the forehead, go on down to the cheek and then over the entire face. Always begin on the most opaque portions and work down to the deepest shadows. With a beginner there is always a tendency for the pencil strokes to be too heavy, and as it usually requires a heavier stroke to build up the highlights, the first few strokes may be placed on the negative without the danger of their showing too heavily. As the work progresses, you will gain better control over the pencil, and as you gradually work down into the shadows, you will find you can use a lighter touch and thus properly blend the more transparent portions of the negative.

If you will follow the directions closely and work conscientiously you will find that, sooner or later, the work will become simple and easy. It is advisable to work on the same negative several times until you find you are able to get the effect you desire. By making a proof after each attempt, you can estimate your progress.

CHAPTER III

Modelling — The Forehead — Wrinkles — The Cheek — The Lips and Mouth — The Nose — Eyes and Eyebrows — The Chin — The Ears — The Shadow Cheek — The Neck, Bust and Arms.

Modelling

A sculptor, in making a portrait bust, has to get the shape of the features correctly modelled or he will not get a good likeness, and similarly a photographer has to indicate correct modelling in a portrait. The shapes and contours of the face are indicated by the highlights, halftones and shadows and therefore, if any of these are altered, the modelling will be affected.

The posing and lighting of the sitter — the correctness of the exposure and the proper development of the plate or film are factors that affect the modelling in a portrait. Naturally, as the modelling in a portrait is the light and shade on the face, the manner in which the face is lighted in an important consideration. If the exposure is not correct, the balance of the lights and shadows will be disturbed and it will be incorrect also if the negative is much over- or underdeveloped. But if the operator and the darkroom man have performed their parts properly, the retoucher will have a negative to work on in which the contours as well as the outlines of the features are correctly indicated by the sequence of light, halftone and shadow shown on the negative by variations in the density of the silver deposit.

In retouching a negative, care must be taken not to alter the modelling. The removal of blemishes and imperfections and the blending, already described, will not affect the modelling if done carefully and not overdone, but as soon as the retoucher begins to lighten shadows and accentuate highlights, he will, if he is not very careful, change the modelling or shape of the features and so destroy likeness.

You will get a good idea of what is meant by modelling and the indication of modelling by means of gradations of light and shade if you will think of a white globe such as is often seen with an electric light inside it. When the electric lamp inside the globe is lighted and the globe is equally illuminated on all sides, there is really no way of telling the shape of the globe by the lighting, but if you were to see that same globe under different lighting conditions, such as, for instance, with light falling on it from a single window, there would be a highlight at that point on the globe where the direct light from the window is reflected from it and this would blend off gradually, through halftone, into shadow on the side away from the light. The sequence of light, halftone and shadow on the white globe would clearly indicate its spherical shape and a correctly exposed and developed negative taken of the globe under sueh lighting eonditions would show in the negative the varying tones.

A human face, properly lighted and correctly photographed, will appear round and solid if the highlights, halftones and shadows are correctly distributed on the face. Each separate feature has its highlights, halftones and shadows, and if any of these highlights, halftones and shadows are altered, the shape of the feature is changed and the likeness is affected.

The Forehead

Consider, for example, the forehead in a properly lighted portrait. There must be roundness and modelling in the forehead, for the shape of the forehead is of vital importance in expressing character. Character is shown, not only by the lines and wrinkles on the forehead, but also by the little prominences or elevations on the forehead which will be indicated in a well lighted portrait by infinitely delicate gradations of tone on the negative. It is a serious mistake, therefore, to work over the forehead with the retouching pencil until it is just an even expanse without any modelling. That is just what is often done by thoughtless retouchers, but it is obviously incorrect. As a matter of fact, if the lighting is just a little too flat and there is a tendency for the forehead to appear too evenly illuminated, it would be permissible for the retoucher to work over the highlights on the forehead very, very gently, strengthening and accentuating them just a very little.

Wrinkles

Wrinkles and lines on the forehead indicate individual characteristics which become more pronounced with age. *Long vertical furrows across the whole front of the forehead* are indicative in most cases of benevolence, therefore it is essential that care be exercised in pencilling such wrinkles in the negative of an elderly person. To remove them entirely would destroy the likeness. It is quite likely, however, that a young child, in making an effort to be very good and keep quite still while having a picture taken, may wrinkle up the forehead in a way

that is not at all natural to that child. In such a case it would improve the likeness to remove such wrinkles. Perpendicular wrinkles between the eyebrows, above the nose, are said to denote honesty, so it would be a mistake to remove them. On a smooth, young face, however, such wrinkles might be produced by a temporary frown, in which case it would improve the expression if such wrinkles were removed.

A retoucher must think of such things as these and must always keep in mind the vital importance of retaining character and likeness.

The Cheek

There is a great variety in the modelling of the cheek. Some are round and full, some hollow. Some have rather prominent cheek-bones. If there is a high colour, either natural or artificial, on the cheeks, it may appear on the negative as a shadow owing to the tendency of red to photograph too dark. This may need attention on the part of the retoucher.

As regards expression of character, a high cheek-bone is said to indicate the animal nature in an individual, therefore it might be permissible to spread the highlight just a little on an unusually high cheek-bone, working it down a little, which will tend to improve the expression. If it is done carefully and not overdone, a very slight modification such as that will not affect the likeness but will tend to improve it.

In working on the cheek, care must be taken to preserve the roundness. In working around the eyes, do not make the mistake of taking out the shadow under the eye. Sometimes there seems to be a second shadow a little below the one immediately under the eye. This

second shadow usually may be removed entirely, as it is nearly always a sign of fatigue or ill health.

Sometimes the line from the nose to the corner of the mouth is very strongly marked. This line is known as the labial furrow. It may often be softened and subdued, but should not be removed entirely or the modelling of the cheek will be destroyed. The direction of the light on the face will affect the labial furrow. If, through faulty lighting, the furrow has been too strongly emphasized, it may be subdued and softened. Do not overdo the retouching of the cheek; that would tend to make the cheek appear puffed and bloated and would destroy likeness.

The Lips and Mouth

It is a well established fact that character is expressed by the shape and the proportionate size of the features. Comparatively few retouchers give much consideration to this subject, yet it is one that deserves attention. Physiognomy, phrenology and character reading are actual sciences that can be relied upon absolutely to give a perfect reading of the character of the individual, provided you understand the principles involved.

It is not possible to take one feature and judge the character of the individual from that. Other features might counteract the indications. In the science of palmistry allowance must be made for opposing indications and the same is often true in reading character from the face. The nose, for instance, might by its shape indicate that the individual possesses strong commercial instincts, yet the balance of the head might discredit this entirely.

Much is expressed by the shape of the mouth and

lips. Signs of honesty are expressed by a firm, steady mouth, while selfishness is indicated by a closely shut mouth. The thinner the lips, the less the affection. The more the teeth are shown, the more the love of applause.

The expression is shown mostly in the eyes and mouth and the mouth is the most mobile feature. As a general rule a pleasing expression is shown by lines that are turned upward. A downward tendency gives a grimness and severity to the face. In order to see the extent of the influence that the curve of the mouth has on the expression, draw on a scrap of paper a couple of circles to represent the outlines of two faces. Put in two dots for eyes and a perpendicular line for the nose. Then put in a curve like a half moon for the mouth; in one let the line curve upwards and in the other downwards. The result will be that you will have a suggestion of two faces with totally different expressions. A little careful retouching on the corners of the mouth can often be done to modify a tendency towards a downward curve.

In retouching the mouth in ordinary portrait negatives it is usually necessary to make only very slight alterations, such as filling in small cracks that may show in the lower lip and softening the shadows at the corners of the mouth. The modern tendency towards a somewhat excessive application of make-up to the lips should be discouraged as far as possible, for it produces an unnaturally deep shadow with an abrupt edge instead of a gradual blending. If any modification in the shape of the lips can be made, it should, if possible, have a tendency to make the lips follow the shape of the "cupid's bow," which is always regarded as being desirable and pleasing.

Great care must be exercised not to remove the little

furrow that is often seen in the centre of the upper lip. If the face has been properly lighted, the modelling in this furrow should be fully retained.

One fact to be observed particularly in retouching mouths is that, no matter how the negative may be lighted, there is very seldom a marked black line between the lips. There is darkness, certainly, but if the head is lighted from any point above the level of the mouth, you will observe that there are three depths of tone on the lips unless these natural tones have been obliterated by a too liberal application of lip-stick. The lower lip, being the most strongly lighted, will be lighter in tone than the red part of the upper lip, but the upper lip will throw a shadow on the lower lip, and this shadow will be or should be the darkest of all. Of course this will show more plainly on negatives in which the head is a good size. Under many lightings, there will be a small but often quite definite highlight on the lower lip which, by its shape and its position, indicates the size and shape of the mouth.

The Nose

Being the most prominent feature of the face, the nose requires special care in modelling. There is often a prominent highlight on the bridge of the nose and the shape of this highlight indicates the shape of the nose. It must be remembered that the bone structure extends only a little way down the bridge of the nose and beyond that point is cartilage. This change is often indicated by a slight break in the line of light on the bridge of the nose. There is a tendency too for the nose to become a little thinner and narrower just at that point. There is usually another strongly defined highlight on the tip

of the nose and it is the position of that highlight that determines more than anything else the length of the nose.

In the case of a markedly crooked nose, it may be advisable to straighten the highlight by a little careful etching and pencilling. A retroussé nose may be lengthened a little by slightly lowering the highlight on the tip of the nose. Such modifications as these must never be overdone or the likeness will be destroyed.

Eyes and Eyebrows

There is no portion of the face that requires such careful handling as the eye and eyebrow. Very often the eye gives the whole expression and this may be easily ruined by the least overworking on this part of the face. Intelligent handling, however, may often materially improve the expression.

If the eye on the shadow side of the face needs to be built up just a little, a slight strengthening will give a more pleasing effect and still not change the expression. This must never be over-done, however, and the balance of light and shade must be preserved.

The shadow under the eye must never be entirely removed. It may sometimes be lightened if it is very dark. The lines at the outer corner of the eyes, which are usually described as "crow's feet," are very characteristic of the individual and, though they may often be subdued, they should never be removed or the likeness will be seriously affected. People who laugh very readily often have such lines at the outer corners of the eyes and in dealing with lines and wrinkles on the face, the age of the subject must always be considered. Lines and wrinkles that occasionally appear on a very

young face may usually be removed entirely, but in the case of an older subject this would be entirely wrong, though they may be modified considerably so that they are not so pronounced.

When the face is lighted by artificial light coming from two or three different sources as is often the case at the present time, there may be several spots of reflected light on the pupil of the eye and when this is the case, it is usually best to take out all except one — the most important one. If there is any doubt as to which one this is, make a print and paint out the highlights and so find out which are the ones that should be etched off the negative.

The eyebrows probably will need very little retouching especially now when it is customary to "make up" the eyebrows so carefully. You may sometimes find a subject where the eyebrows meet or almost meet above the nose. As this is apt to give a frowning expression to the face and is not considered to be at all attractive, it is permissible to modify this considerably and even to remove a little from the inner corner of each eyebrow. The extent to which this should be done depends upon the age and sex of the subject.

The Chin

In profile views especially, character is shown by the chin. A well shaped, *square* chin is regarded as a sign of honesty, a strong, dominant personality is indicated by a projecting chin, while a receding chin indicates the absence of such qualities. Sometimes with subjects who are inclined to be stout, there is a fullness under the chin that is not at all pleasing. This can often be modified by careful use of the etching knife as well as the pencil.

In a front view of the face this is not so easy to do, however, by working away the folds in the flesh with the pencil and by careful rubbing down or etching of those parts that are too strongly lighted, it is possible to give the subject a very nicely shaped chin.

If there is a deep dimple in the chin, it may be modified by a little careful retouching, but it should never be entirely eliminated, for to do so would tend to broaden the chin and the likeness would be very much impaired.

The Ears

In profile views of the face, one ear is usually shown very distinctly and even the ear shows traits of character. An ear, for instance, that is inclined to be pointed at the top and is joined to the head without any lobe at the bottom indicates that the owner of that ear is inclined to be selfish. A long, narrow ear is said to show ambition. A well rounded ear that is almost as wide at the bottom as it is at the top shows a vital temperament. The " physical " ear is pointed at the top and the " mental " ear is pointed at the bottom.

Not much retouching is needed on the ear as a general rule. It is generally advisable to keep the ear as subdued and as unobtrusive as possible, lest it attract undue attention.

The Shadow Cheek

In retouching a three-quarter view of the face lighted with an " ordinary " front-side lighting, so that one side of the face is illuminated and the other side is in shadow, the shadow cheek should usually be left to the last.

You will need a very delicate touch and after having worked on the lighted parts of the face your touch will

ıave become much lighter and you will have good control ›ver your pencil. This will enable you to control the vork in the shadows of the shadow cheek and prevent he pencil marks from being too heavy.

There will be a highlight on the cheek, just as there s on the other cheek, but it will be very faint and barely ·isible unless, of course, there is a secondary lighting ›n the shadow side of the face. There may be a strip of ight on the edge of the cheek from a spot-light.

[The Neck, Bust and Arms

In retouching the neck, bust and arms we must adopt a method of handling the pencil which should get over the ground as quickly as possible and yet print with the desired effect. We should work with a broad and open style, with the eyes well back from the negative, using the pencil freely and easily and watching very carefully the general direction of the pencil strokes.

On the neck, the stroke should be across the neck, never up and down. On the bust we may change the direction of the pencil strokes and instead of making them follow the curve of the jaw, have them make an angle of about forty-five degrees with the perpendicular, although almost any direction except directly up and down is allowable. On the arms, the direction of the pencil strokes should be anything except parallel with the length of the arms or at right angles directly across the width of the arm.

Very few ladies like to show a bony or scraggy neck, and therefore all indication of muscles such as the large one proceeding from the back of the ear to the collarbone, which is used for turning the head from side to side, should be removed, at least as far as the perpen-

dicular character is concerned, leaving, however, an indication of its insertion in the breast-bone, which indication marks the limit of the length of the neck.

In retouching the arms we have a very great variety in the texture of the skin, but one style of handling will be found sufficient. Let the touch be of a scumbling character, taking any direction except parallel with the length of the arm. If the arm is hanging down, the veins on the hand may become more prominent than is desirable. If this is the case, the veins may be removed entirely. On no account should the marking in front of the elbow be taken out, as that produces a wooden effect.

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CHAPTER IV

Vhat to Aim at — Children's Faces — Babies and Aged People — Regarding Anatomy and Likeness — Freckled Faces — The Ordinary Face — The Best Touch — Direction of the Touch — Mechanical Devices for Retouching — Construction — Operation — Etching — Practice Work — Reducing Paste.

What to Aim at

In retouching negatives of portraits, one of the first considerations on the part of amateurs and beginners is o attain texture, and in so doing they waste valuable ime and energy on a subject that really does not demand that expenditure. The cause of this mistake is the ame that produces many others on the part of the tyro; e endeavours to get a good result without any definite dea as to what that result should be and thinks that if e produces a nice stipple he has retouched the face, forgetting in the first place why it is desirable that a stipple hould be there at all and, in the second place, what it hould represent.

The writer has seen instructions to retouchers in which hey are advised to work with a succession of marks esembling *commas — dots, in fact, with tails to them;* thers advise working with small circles, with straight nes, or cross-hatching, or dots alone, and in many other ifferent methods. Such advice may be given with perect honesty and the persons giving such advice may be erfectly capable of producing good results by the methds that they advise, but, in the writer's opinion, such

instructions serve only to confuse the novice and retard his progress. It is impossible for any one person to work precisely in the same way as another and it is unwise for a beginner to attempt to follow exactly the movements of another hand. The best plan is to study carefully those parts of the negative that need to be strengthened and the parts to be removed or altered and make sure that the work is done with a certain degree of finish. Then we will find that the texture will, in a measure, take care of itself.

Suppose, for instance, we have to retouch the face of an old man, a deeply lined and rugged face. Common sense will tell us that if we work at it until the skin looks as smooth as a child's, it will be far from true to nature.

A certain amount of discrimination must be used in retouching and no hard and fast rules will apply in every case. One's methods must be differentiated according to the nature of the work in hand. Observe the character and texture of the skin in the negative being worked upon and try to produce the same effect. Some faces are patchy but soft. Do away with the patchiness, but leave the surface smooth.

Children's Faces

Children's faces cannot be too delicately worked, and the softer and chubbier you leave them, the more natural they will appear. Strong lighting and heavy retouching will tend to add age to a child's face. Some children have many freckles; these it is always well to remove; no one has ever asserted that freckles constitute beauty.

In the faces of young men and women there should be

no deep lines or wrinkles. There must of course be light and shade and modelling, sometimes even deep shadows that it is desirable to leave. It is in retouching the faces of women of middle age that there is the greatest need for the exercise of some discrimination and tact. If you do not make them youthful enough, you may offend, yet, if you flatter certain sitters too much, they will quickly object. In dealing with photography on a business basis and in making portraits that are to be readily salable, it is perhaps advisable to err, if at all, in the direction of overdoing the retouching rather than doing too little. In retouching the negatives of elderly people you can modify and soften the indications of age, and you can soften the skin and reduce the wrinkles very slightly, but it would be a great mistake to put a smooth stipple all over such a face.

Babies and Aged People

Tbe faces of babies and very old people usually require only a very little retouching. If the photographer has been careful in arranging the lighting and if the negative was fully exposed and properly developed, it will be hardly necessary for the retoucher to do anything at all. There may be pinholes or similar defects that have to be removed and there may be some slight blemishes of the skin that will call for a slight amount of elementary pencil work, but, apart from that, it is very seldom that any retouching is needed. Most children have clear complexions, and to add an artificial "stipple" to the negative would destroy its characteristic beauty. There should be no "grain," for a child's skin is so soft and smooth that it has no grain.

The faces of aged people are just the reverse. The

skin is not soft and smooth, but it has a characteristic texture. Every feature is full of character which has been gradually moulded through the years that the individual has been fighting the battles of life. This should of course be retained and so the retoucher should rarely do more than remove minor blemishes of the skin.

Wrinkles should not be removed altogether, but if a harsh lighting has been used and the wrinkles have been very strongly accentuated, they should be softened. As a rule a rather soft, flat lighting is best suited to old faces. There is already so much character in the face that it does not need to be emphasized by the use of a contrasty lighting.

Regarding Anatomy and Likeness

A photograph is not a microscopic study of anatomy, therefore do not attempt to reproduce every pore of the skin as some retouchers do. If you were going to paint a portrait, you would not take a fine brush and draw in separately every hair on the head, but you would try to represent the masses of hair as masses. The same idea applies with equal force to the texture of the skin. An artist will try to represent as much as possible with one touch of the brush.

Every good portrait negative should show clearly the good points as well as the defects in the face, the characteristic shape of the features and the anatomy of the face, and the retoucher should never alter these except that he may to some extent modify and improve whenever possible any defects in the face that may be unduly prominent. How far a retoucher may go in doing this has been taken up in the consideration of each separate feature. Crooked noses, double chins, eyes that are not

quite straight, prominent or poorly shaped ears are some of the defects that may be corrected in the negative in order to obtain a more pleasing and a more salable print. The modification of facial defects should be taken care of as far as possible in the posing and lighting of the subject, for there is a great deal that can be done towards subduing some such defects by careful selection of the best point of view from which to photograph the face. A good operator will do all he can to make it unnecessary for the retoucher to undertake any very drastic modification of the negative. A slightly crooked nose, for instance, is often far less noticeable when seen from one side of the face than from the other. The better side, as a rule, is the side from which the nose appears to have been pushed. A double chin is far less prominent if the head is well raised and a standing pose is taken rather than one seated and with the head dropped. If the eyes are very unequal, a profile view, showing the better eye, may be the solution of the difficulty. Ears may be shaded and placed in deep shadow so that their prominence is subdued. After a clever operator has done his best, an equally clever and experienced retoucher can do much towards improving the artistic effect in a portrait.

But retouching should never be overdone so that it destroys the likeness and natural expression. Half-tones and shadows must be fully respected, for upon their contrast with the highlights depends the roundness and modelling of the features. You can blend the edges of tones, and grade one tone into another, removing and filling in obvious defects such as freckles or other flaws in the skin, but do not change the modelling or the likeness will be affected.

Occasionally you can strengthen highlights a little if they need it, and when you do so, begin with the forehead where the highlights are usually the strongest, and work downwards. Endeavour to accomplish your results with as little work as possible. The less the amount of lead applied, the better the results obtained. Highlights that are just a little too strong may be pencilled around very softly and graded into the immediately surrounding tones. This will usually tend to reduce them sufficiently.

Freckled Faces

In the case of freckles, it is advisable softly but determinedly to nibble them out as you work along, taking them feature by feature, and not going from one part of the face to another. With one bold attack, work out each freckle as you come to it.

Plate VI shows an unretouched, heavily freckled face and Plate VII presents the same after retouching, worked feature by feature to solidity and gradation.

Do not work aimlessly, first a touch or two on the nose, a touch on the brow and then on the cheeks, but take the forehead first, working from the highlights, then the cheeks, nose, upper jaw, chin and neck, completing each feature separately and never having to go back on the work already done.

It may be mentioned that the sitter shown in Plates VI and VII really possesses a very nice, clear complexion, but owing to the impossibility of obtaining permission from any freckled lady to allow her imperfections to be published, the freckles had to be painted upon the face of the sitter, upon the distinct promise to mention the fact in the book. Even so, it shows considerable

courage on the part of the lady. After this who shall say — "Vanity, thy name is woman!" The faking of the freckles was purposely overdone, lest the halftone reproduction should minimize their full beauty. Much of the delicate halftones is lost in the reproduction of Plate VII.

The Ordinary Face

To return to the ordinary, unfreckled face. Proceed to fill in whatever shadows or dark markings you intend to remove, and bear in mind there can be only one part of a head that will have the highest light on it, so be careful to make all other lights subservient to that highest one. There is also one shadow that is deeper than the others; do not therefore fill in all shadows so that they are equal in depth, as that will produce flatness. When you have done this, you will see that the negative looks patchy. Fill in the largest patches with any movement of the pencil you find most convenient (bearing in mind that if you do not work with stippled dots you will make lines) and, although it is impossible to lay down a system as infallible and declare that it is the only one, yet it may be of service to some to know of a method which has been attended with complete success.

The Best Touch

In the writer's own personal experience he found lines to be the best and most effective method to attain speed and excellence. Therefore it would be well to let your touch — at any rate, to begin with — have the character of lines following the general direction of the different features, but of course they must not be made with sufficient density and weight so that they will show as lines

in the finished work, but finely and delicately and without pressure.

All pencilling on the negative must be of the lightest possible character except where extra sharp edges or heavy shadows may call for a bolder and more determined attack. The line touch, either horizontal, diagonal, vertical (on the nose only), or the first two curved to follow the general direction of the features, with the pencil running here, there and everywhere, seeking the broken and ragged edges of the different tones and grading them away until lost to sight, is undoubtedly the quickest and most satisfactory method of retouching, especially when it is varied with an occasional cross-hatch to blend and knit the whole, and then on again, seeking edges to devour, for leaving edges and raggedness and the wholesale removal of halftones and shadows are the cardinal sins in retouching.

There are many other touches used by skilled workers, from the cross-hatch to the comma, the tight, niggling stipple and the irritating dotting or tap-tapping of the point of the pencil almost dead-on and at right angles to the negative, which is indeed enough to make the worker "dotty" with its nerve-wracking, monotonous sound.

According to the writer's experience, where illustrations of the different touches have been shown on a large or small scale without a teacher's supervision, the effects attained by the novice have been simply disastrous, for he has accepted them literally and boldly and has hatched heavily, has dotted and circled all over the face indiscriminately, cutting through the feature and face lines in the most appalling manner, and so increasing the density where no density was required. Retouching

is an art of delicacy and long-practised skilful treatment, and no stereotyped, conventional " touch " can be truly effective, for it must of necessity be constantly broken and altered to follow the tones, edges and gradations as shown in the unretouched negative. The running line touch is the least dangerous of any and is certainly the easiest in the hands of a beginner, especially if continued in a circular direction closely or broadly according to the part to be worked, and he is advised to keep strictly to it until almost without knowing it he finds his own " touch " just as the schoolboy in time acquires his own " fist " in writing.

To attempt the finishing of a face with a regulation, even-weight touch is to court disaster, for the long experienced professional seldom thinks of the touch or the stroke that he employs. He instinctively changes from one touch to another according to the effect he wants to produce.

Direction of the Touch

The lines should usually tend to go across the surface you are working on, following the natural curves of the face. A safe rule is to let the pencil follow the curve of the eyebrows in working the forehead, tailing off at a diagonal slant into the temples, especially in the treatment of wrinkles. On the cheeks work with the curve shown by the lower eyelids and on the jawbone or face line work softly with the line and in the direction in which it runs. Never cut through the face line, wrinkles, crow's feet, or any of the pronounced lines of the face, but always work *with* them.

We have all seen the stripe down the side of a soldier's trouser leg; it carries the eye with it and makes the leg

look longer. Horizontal lines would have just the opposite effect and would give a suggestion of breadth, so whichever way your lines incline, they will lead the eye in that direction and will convey a suggestion of height or breadth according to the direction in which they run.

On the highlights of the forehead, the cheek bones, the tip of the nose and chin, the touch may be circular, especially on the chin, but for increasing the highlight on the bridge of the nose, the touch should be at the same slant as the line of the nose, in a series of lines parallel with the nose line as shown by the shadow side of the face. This increased line of lighting must be softened off on both sides and not left like a streak of whitewash, as is so often seen, and neither must it commence right at the root of the nose and run down its entire length, hut it must commence and end exactly where shown in the unretouched state. The pencil drawings reproduced in Plates VIII to XI were designed to show the directions of the strokes advisable in retouching different features.

Mechanical Device for Retouching

The use of electric retouching machines is now becoming very common in professional establishments and their use has been found to result in a speeding up of the work and a more uniform touch. They have been found also to afford relief from nerve strain, which is an important consideration when retouching is done continuously for many hours. Of the several such machines that were placed on the market some years ago, the only one that has proved to be practical and thoroughly efficient is the Gilbert Electric Retoucher, " The Little Speedster," a pencil vibrated by electricity that reduces

drudgery and fatigue to a minimum and makes retouching a pleasure instead of an irksome task.

These machines are capable of giving a stroke of varying quality, suitable for work of any grade, from a coarse stipple to the finest possible stroke, and this is done automatically by a simple adjustment of a screw connected with the oscillator.

The electric retoucher gives the stroke by automatic vibration and all that it necessary is for the operator to know where to place the lead and then guide the pencil over the negative, as in ordinary retouching.

It is best to use a long point, from one and a half to two and a half inches long, and of course the degree of hardness of the lead must be adjusted according to the character of the work in hand.

Construction

In the Gilbert "Little Speedster" the oscillator is placed on the end of a retouching pencil. A pencil is furnished with the outfit, although any pencil or lead holder of a proper size to fit the shell may be used. Connection for the electric current is furnished by a light weight flexible cord conductor and a transformer that screws into any electric socket. The device may be obtained to operate on any current, either direct or alternating, or it may be used with dry cells if electric current is not available.

Operation

Mr. Gilbert makes the following suggestions on the use of the "Little Speedster." A hard or a soft lead should be used according to the density of the negative or of the part that is being worked on. The longer the

point, the finer the work. For fine work the point should be about two and a half inches long. For a coarse stipple do not have the point so long, nor quite so sharp. Do not lift the pencil from the negative except to inspect the work. Look ahead as you work, beginning on the highlights and working down to the deepest shadows. The weight of the pencil lightly applied to the negative is usually sufficient for average work, but a little more pressure may be applied if needed to fill in heavy lines. Have plenty of diffused light coming through the negative so that it is not necessary to sit close to the negative in order to see where to apply the lead, but do not have so much light that the delicate gradations are obliterated. A little careful practice with the " Little Speedster " should make any beginner at retouching really expert in a few weeks. The machine will do the work and will do it right if it is properly guided, and an amateur will find that by the use of such a machine he can do retouching that is equal in every way to that of the most expert professional.

Etching

Etching, or reducing the density of the negative by means of a knife, should not be taken up until the retoucher has gained some experience in the use of a pencil. By means of the pencil, shadows can be built up and can be partly or entirely eliminated, and transparent blemishes can be removed. By means of etching you can reduce highlights that are too strong and you can remove objectionable parts entirely from the negative if that should be desirable, so that by a combination of retouching and etching you can make practically any alteration that you may desire on the negative.

Highlights on prominent bones in the neck may be subdued, crooked noses may be straightened, the contour of the figure may be improved and may be reduced in size if too stout, and many other things may be done without very much difficulty when some dexterity in the use of the knife has been acquired by practice.

Careful practice is the secret of success in the use of the etching knife and the knife must be really sharp. Some retouchers think that a thin, flexible blade such as a razor blade is not of much use for etching, while others find such blades entirely satisfactory. The great advantage in using a safety-razor blade is that a new blade is usually very sharp and is in good shape to use, while a regular retouching knife, such as those illustrated in Fig. 2, has to be sharpened carefully and expertly with a slightly bevelled edge instead of a thin edge like a razor blade.

As a matter of fact we believe that good work can be done with either type of knife and that the preference for one or the other depends entirely on which one the user has become accustomed to. Mr. T. S. Bruce, an expert English professional retoucher and teacher of retouching, who revised several editions of this book, much preferred etching knives of the types shown in Fig. 2 and was not at all enthusiastic about safety-razor blades, while, on the other hand, the reviser of the present edition would not want to use anything but a razor blade for etching. It is largely a matter of personal preference and we believe that any type of knife, as long as it is in good condition, can be used successfully after the user has learned how to handle it to the best advantage.

Skill in the use of the etching knife can be gained only by constant practice.

Practice Work

Before attempting to etch any part of a negative that is a valuable one, you should provide yourself with a few discarded negatives and practise etching on them. Negatives with opaque, dense backgrounds are to be preferred, as they afford a better opportunity for practising. Every worker must find out for himself the manner of holding the knife that suits him best, but we believe that it will be found best to hold the blade of the knife between the thumb and the first and second fingers, in such a way that the side of the thumb and the tip of the first finger are actually in contact with the negative while the blade is being used. The blade must be held perpendicularly to the surface of the negative, with practically no slant. If it is slanted at all, the blade should lean towards you and not away from you, but too much slant is apt to cause you to cut too deep and with the blade held perpendicularly you can better control the depth of the scraping or shaving of the surface of the negative.

The secret of success in etching is to use the blade very lightly. The first few strokes should make practically no perceptible mark but with continued light strokes of the knife a gradual change will take place and the film will become thinner where the knife has been applied to it. Do not use the point or corner of the blade, as that will scratch the film and not shave it smoothly. The point should be used only when you want to etch a fine line.

The only way to become expert with the etching knife is by practice, and so the would-be retoucher must get

as much practice as possible on discarded negatives, so that he will feel perfectly free at first to try different methods of working and of holding the knife without the fear of spoiling a valued negative. A dense, white background gives plenty of scope for etching and some negatives with such backgrounds should be secured if it is possible.

On a plain white background you can see the effect of your work more distinctly; you can see whether the knife is scratching the film or is shaving smoothly. You have a large area on which to practise, and such preliminary practice should be kept up until you can control the knife and can produce any effect that you desire.

If the knife scratches and does not shave smoothly, it is either because it is not sharp enough or because it is not being held properly. The exact angle at which to hold the blade will soon be discovered after a little practice. Usually when it is perpendicular it will shave nicely without either cutting the film or scratching it. If the top of the blade is leaning too much towards you, the knife will scratch the film instead of shaving smoothly. If it is sloping the other way, the knife will be apt to cut too deeply. Keep in mind always the need for extreme lightness and delicacy in etching. A single stroke of the etching tool on the film should show no perceptible effect, but after repeated strokes a slight thinning of the density of the film should be visible.

One difficulty the beginner may experience at first is in placing the knife on the exact place where the etching is needed. This is another thing that will be easily learned after a little actual experience.

Reducing Paste

An etching knife is almost indispensable for many purposes, and a really competent retoucher ought to be expert in its use, yet there is another method of reducing density that is often more convenient than the use of a knife. By means of a reducing paste, which is made up of a very fine abrasive powder mixed with a heavy grease, large areas in the negative can be smoothly, easily and fairly quickly reduced in density. To darken drapery or to reduce highlights that are too strong, or bring down the over-exposed parts of a negative — such as windows in an interior view — into better relation with the rest of the negative, the use of a reducing paste is very effective.

The paste can be applied with the finger tip by taking up a small quantity of the paste on the finger tip and then rubbing with a circular motion over the part of the negative that is to be reduced. You will find that it requires only very little pressure to reduce the density of the space to which you have applied the reducing paste. The more heavily the film is rubbed, the more quickly will the density be reduced. By means of a light or a heavy pressure you have absolute control over the blending and you can get almost any desired result. Begin by rubbing lightly at first and then increase the pressure a little if quicker action is desired.

The secret of successful reducing with abrasive paste is in the amount of pressure that is used when applying the paste. By practice you will soon learn the exact amount of pressure that is best, and it is well worth while to become familiar with this method of reducing density.

If you do not care to use your finger in applying the paste, you can stretch a piece of canton flannel over the finger tip and use that instead of the uncovered finger. If you want to apply the paste to a small or very narrow part of the negative, you can make a stump by rolling some cotton over the end of a thin stick and working it down with some of the paste into a hlunt point.

There are many occasions on which the etching knife or reducing paste should be used in actual professional work. Sometimes the eyebrows are not well shaped or are uneven. It is a simple matter to etch in a small portion to make them balance or to improve the shape. Sometimes a little hair can be etched in if there is a bald spot on the head that is rather conspicuous. Sometimes there has been a too liheral application of a greasy preparation to keep the hair flat, which causes the hair to catch the light too strongly, so that there are highlights that are too conspicuous. In the latter case, the film should be etched only just enough to match the surrounding parts. In a case where the nose is noticeably crooked, it may be necessary to etch away a portion of the highlight on the side towards which the nose curves, and pencil in a little light on the other side, to straighten the line of light. Of course such work as this must always be done so carefully that there is no indication of any such modification on the prints.

Always make proofs from the negatives that are to be etched before doing any etching, so that you can see exactly what needs to be done.

On a portrait of a lady in evening dress the outline of the neck and shoulders often needs to be modified and, after making a proof print and indicating the changes on that, the outline, when it is satisfactory, should next

be marked on the negative. Then reduce, with paste, either on the finger tip or on a stump, any highlights on the neck or shoulders that may be too strong. Sometimes a small chamois stump will be found practical and serviceable for applying the paste. When this has been done, etch away carefully those portions of the shoulder and neck that are to be removed entirely, working carefully till those parts that have been etched match perfectly with the background. Plates XII and XIII show the work of a skilled English retoucher in completely altering the style of hairdressing and brightening up an old negative to bring the sitter's favourite pose up to date.

When the etching has been completed, apply retouching dope in the usual way and proceed with the retouching. If there are any places where the etching has been overdone, they can be built up with the pencil. Do not, however, apply the retouching dope until all the etching has been completed, for it is not so easy to etch the film after it has been doped.

CHAPTER V

Retouching Landscape and Architectural Negatives — Applying Ground Glass Substitute — Working on the Back of the Negative — Papier Mineral — The Air Brush — Blocking-out — Negative Varnish — Softening Edges — Etching away the Background — Filling in Scratches on the Negative — Photographs of Animals — Etching a Single Figure from a Group — Straightening Crossed Eyes.

Retouching Landscape and Architectural Negatives

There is a very prevalent idea that retouching needs to be applied only to portrait negatives. It is true that almost all of the portrait negatives that are made — either in the home or in a professional studio — can be improved to some extent by a little careful work on them by an expert retoucher, and there are also a number of other subjects that might be greatly improved in the same way.

In negatives of landscape subjects there is often too much contrast, blurring of trees through movement caused by a strong breeze, the inclusion of unnecessary detail, a lack of clouds, a falling off of the definition at the corners owing to imperfect covering power of the lens, part of the image being cut off by sagging bellows, to say nothing of pinholes, airbells, scratches on the film and other defects.

There are ways of correcting such defects by means of retouching, both with the pencil and with the knife

and reducing paste. Sometimes it is not possible to do as much work as is needed on the film side of the negative, in which case we can apply ground glass substitute and work on the other side of the negative as well.

Ground glass substitute may be purchased from any dealer in photographic supplies. Those who are interested in making such things will find the following formula very satisfactory:

Gum sandarac	90 gr.
Gum mastic	20 gr.
Dissolve in ether	2 oz.
Add benzole	1 to 1½ oz.

To apply the ground glass substitute to the glass side of the negative, proceed as follows:

Applying Ground Glass Substitute

Be sure the glass is perfectly clean and free from dust. Hold the negative, glass side up, in the left hand, with the thumb at the extreme corner and the fingers supporting the plate underneath. Pour a pool of ground glass varnish into the centre of the negative — a little more than enough to cover the negative — and immediately tip the plate gently so that the varnish will run down into the right hand top corner. Just as it reaches the corner, tilt the negative gently so that the varnish will run towards the left hand top corner, then guide it down towards the left hand bottom corner and finally into the right hand corner, tipping the negative over the mouth of the varnish bottle so that any excess will run back into the bottle. The varnish will set almost immediately, with a surface that very closely resembles ground glass. There is a knack in applying the ground

glass substitute that will be acquired after one or two trials. The important thing is to go slow and avoid jerky movements in tilting the negative to guide the flow of the varnish. Tip the negative only very slightly and gradually, so that the varnish will flow in a continuous sweep over the entire surface of the negative, from the right hand top corner, along the top, down the left side and across the bottom and then back into the bottle. It must not be done too slowly and deliberately or the varnish may begin to set before the plate is entirely covered. Try not to get any of the varnish on the film side, but if a little should get on to the wrong side of the plate, it can be removed by means of a wad of cotton dipped in denatured alcohol.

If you are using films instead of glass plates, you can flow the substitute on a piece of clear glass the size of the film and then bind the film to the glass, or you can use a piece of real ground glass and bind the film to that.

Working on the Back of the Negative

When the plate has been coated on the back with ground glass substitute, you have a fine surface on which you can work with pencil, paint or crayon sauce applied with a stump. In this way you can build up a portion of a negative that may be almost or entirely blank through faulty manipulation of the camera or through poor covering power on the part of the lens. If there are parts that should print out a little darker, such as clouds in a sky that is too dense, you can scrape off the ground glass substitute in those parts so that the light will penetrate more easily. In doing so, be careful to blend off the edges so that they are not apparent in the print. The thickness of the glass will give a little dif-

fusion which will help to prevent the edges showing too plainly.

You can add density to this ground glass surface with a pencil of any degree of softness. You can use ordinary drawing pencils, as you do not need the fine, sharp point of a retouching pencil, or you can use a soft lead with a chisel point, as shown in Fig. 1. You can use powdered crayon on a stump, or water colour applied with a brush.

If only a line or two is needed or if there are only a few highlights that need to be strengthened, this can be done directly on the glass, without applying any ground glass substitute, by using a special pencil that is made for marking on glass, china or metal. Such a pencil can be obtained from any photographic dealer.

Papier Mineral

Another favourite way of preparing a negative so that parts of it can be strengthened by the addition of handwork on the back is to attach a piece of thin tracing paper such as "papier mineral" or onion skin paper — or even a very fine grained tissue paper — to the back of the negative, if it is a glass plate, and then work on that with pencil, paint or crayon. The paper should be laid in water and thoroughly wetted before it is applied. A narrow strip of mucilage or liquid glue is applied to the negative, close to the edge, and then the wet paper which has been pressed between two sheets of blotting paper is attached to the negative and pressed down carefully so that it sticks to the glue at the edges of the negative. By wetting the paper before it is applied, it will expand a little and then when it shrinks again in drying it will be found to be perfectly flat and tightly

drawn so that it presents a good surface on which to work.

Such paper is less transparent than ground glass or ground glass substitute and will hold back the negative more in printing. If there are parts that are too dense, the paper may be cut away with a sharp knife, to help on those dense parts, or the paper may be made more transparent in those places by means of an application of a solution of one part of balsam to six parts of turpentine.

The Air Brush

The air brush is now used very extensively in photography, especially by commercial photographers and those who make photographs for advertising purposes. Not only is the air brush used in working up prints, but it is also used on the negative, for putting in backgrounds and for building up negatives. A portrait photographer could make good use of an air brush for working on the print or on the negative, and a retoucher who has acquired some skill and experience in the use of the air brush would find it very helpful to him in his work. For working up enlargements, either in black and white or in colour, the air brush is an ideal instrument and this use will be taken up in further detail in a later chapter.

Blocking Out

Sometimes in commercial photography it is necessary to block out the entire background so that it will be opaque on the negative and will print out white in the print. This sort of work calls for some practice and a very steady hand. Blocking out is usually done on the

film side of the negative, following the outlines closely and carefully, either with a fine brush or with a fine pointed pen such as is used for making maps. If the edges of the object that is being blocked out are straight, such as in a piece of machinery for instance, a straight-edge may be used to guide the pen. For curves, it is sometimes possible to find one that will fit on the celluloid forms used by draughtsmen. Otherwise the edges and outlines must be followed carefully by hand.

Either opaque or waterproof drawing ink may be used. That is a matter of individual choice, as either of them serves the purpose very well. When a pen is used, it must be handled very carefully and the film must be perfectly dry and bard or the pen will be apt to scratch. Whether you use a pen or a brush, work very carefully and do not have too much ink or opaque on the pen or brush.

Some workers use an ordinary retouching desk with the carrier frame lying back as far as possihle. Others prefer a glass topped table with an artificial light underneath, so that the negative can be perfectly flat all the time. Turn the negative in any direction that is most convenient. Work away from corners and not into them and always work outwards from the centre of the negative.

The usual method of working is to outline the subject carefully with the pen and then extend the outline with a brush until it is about half an inch wide. Then the rest of the negative that has to be blocked out can be covered with opaque paper cut to the required shape, so that it overlaps the opaqued line.

Two coats may be needed. It is a good plan, after the first opaque line has been completed, to set the nega-

tive aside to dry before putting on the opaque paper. When it is dry, examine it carefully to see if there are any places where a little more ink or opaque is needed. If a large number of prints are to be made from the blocked-out negative, the ink or opaque can be protected from rubbing off by the application of a coat of clear varnish over the entire negative, or over those parts that are not covered with black paper. Regular negative varnish should be used, and it is applied in just the same manner as was described for the application of ground glass substitute.

Negative Varnish

There are several kinds of negative varnish. Some are applied to the negative cold, while for the application of others it is necessary to heat the negative. Of course the cold varnish is the only kind that should be used for films, though either kind can be used for glass plates.

Softening Edges

Sometimes a photographer is called upon to block out the background in a portrait or figure study and this has to be done in a slightly different way. If opaque were used with a brush or pen, the edges would be too hard and clear cut. To get a softer edge and make the outlines of the figure blend a little more gradually into the background, use a soft retouching pencil and work in the outline with that. When you have gone all around the figure with the soft pencil, you can extend the line to a width of about half an inch or so with a brush and opaque. A flat brush, such as is used by showcard writers, is best to use for this purpose.

Another way of softening the edges and outlines would be to do the opaquing on the back of the negative instead of on the emulsion side.

In applying opaque with a brush, do not have the brush too wet so that the opaque is too thin to make a light-tight coating on the film. Have it just moist enough so that it can be applied easily with one stroke of the brush.

Etching Away the Background

Occasionally it happens that it is necessary to make the background black in the print instead of white and in order to do this, anything that shows in the background must be etched off the negative.

There are two ways of doing this. Either the knife or razor blade is used in the way that has already been described and the background is gently and carefully etched down until it is sufficiently transparent to print out dark in the print, or the emulsion is removed entirely from the plate, leaving just the bare glass.

Although this latter method is seldom used at the present time, it is necessary for a retoucher to be familiar with it. The negative must be perfectly dry. If the weather is at all damp, it would be a good plan to dry the negative thoroughly over the radiator or near a fire before you begin to work on it. Then put the negative on the retouching desk or the glass topped table and with a sharp-pointed knife trace around the edge of the image as closely as possible, making a clean cut right through the emulsion, down to the glass.

Now take the negative and dip it in water, just for a second or two. Blot it off and put it back on the desk. Take the knife and, starting about an eighth of an inch

outside the original cut, with a slanting stroke, run the knife through the emulsion to meet the first cut, so that you can peel off the emulsion all around the outline.

When you have cut the emulsion, soak the negative again in water. Then, starting at one corner, rub your thumb over the film so that the emulsion will work loose from its support and you can roll the emulsion right off the negative down to the part that has been removed with the knife. Be very careful not to scratch or damage the part you want to print.

Wash off any small particles of emulsion so that the background is clean and transparent and then set the negative up to dry. This will give you a negative with a clear, transparent background that will print out black in the print. You must be very careful in making the first cut around the outline, as it is difficult to correct any errors.

If you do not want the outline to be quite so sharp and clean-cut, you can etch or shave down the edges instead of cutting right through, so that the outlines will blend into the background more gradually.

A black background like this is not used as often as a white one. Pictures that are so treated are, as a rule, photographs of commercial subjects and are therefore, usually, pictures from which reproductions are to be made for advertising or other purposes. For reproduction purposes a white background is generally better adapted than a black one.

Filling in Scratches on the Negative

There is one thing you will find you can do very easily after you have gained some experience in the use of the

pencil and the etching knife, and that is the retouching of scratches or slight abrasions on the negative. If you have tried to fill in a scratch with the pencil so that it will match and will blend into its surroundings, you will have discovered that it is a difficult thing to do, as it is almost impossible to get the lead on evenly.

The best thing to do in such cases is to etch the scratch with the point of the knife and shave down the edges of it until they are smooth. Then you will find that it is an easy matter to fill in the scratch with the pencil so that it will hardly show.

Retouching Photographs of Animals

Photographers are very often called upon to take pictures of favourite animals, such as horses, dogs, cats, birds, and in one respect they are all alike — they move at inopportune moments — so that the retoucher is called upon to restore ears that have been laid back, paws that have changed their position, tails that have been wagged, etc. The modern, ultra-rapid plates and films and the very fast lenses that are now obtainable have mitigated these movements to a great extent, but still they occur, in the studio at least, and according to the nature of the lighting.

Pedigreed animals often have to be photographed indoors, either in their own stables or kennels or in the show pens, while they are on show, and very often the light that is available is not of the best. The owners of highly bred and very nervous animals sometimes object to the use of flashlight, as it is liable to startle the animals.

Sometimes we have negatives of dogs with two tails. In such cases, select the better one and with the knife

or abrasive paste remove the lights on the other and with the lead pencil fill in the shadows; the same with horses with four ears. Such phenomena would doubtless be very interesting to the naturalist, but the owner of the animal would perhaps fail to recognize such a photograph as a good likeness of his property.

Negatives of dogs with long hair sometimes cause trouble. When the hair is dark-coloured, black or reddish-brown, care must be taken to avoid underexposure. If we have a negative of a collie, a retriever or any animal with dark-coloured, long and shaggy hair, and the animal has moved a little, it is comparatively easy to sharpen up the negative with a few judicious touches, but when it is a smooth-coated animal, a horse or a smooth-coated dog, there is very little that can be done, though sometimes such a negative can be improved by etching away the double outlines and filling in with pencil. Sometimes a horse flicks the tail and appears to be tailless in the picture. A clever retoucher can sometimes restore the tail. The shape of the tail in its normal position having been ascertained, preferably from personal observation, and a rough sketch having been made of it, the retoucher can often introduce a tail by the aid of the etching knife, with highlights added where necessary with a soft lead pencil.

It often happens that people owning valuable or favourite animals like to be photographed with them, and you pose the owner, with the dog (let us suppose it is a Newfoundland or a collie or a black retriever) sitting down by the side or in front. Well, the owner's face is very white compared with the colour of the dog, so that either the dog is underexposed or the owner's face gets exposed too much. The photographer must do the best

he can with the negative in the darkroom and then the retoucher can flow ground-glass substitute over the back of the negative, scraping it off over those parts that are too dense and working over parts that are too thin until an even and properly graded print can be made from the negative.

Dogs, horses, etc., often have to be on a leash or held hy the reins and some photographers will have the tail held at the right pose with the aid of string. All such things, where they show in the print, have to be removed from the negative. Those parts that are dense in the negative must be carefully etched down with the knife or razor blade and then any retouching should be done where it is needed with the pencil, after applying retouching dope to the negative in the usual way. If such work is carefully done, there will be no trace of the leash or reins in the print. If a lot of pencil work is needed, more than the film will take, the negative must be double worked by retouching on both sides, as described on pages 30 and 71.

Unsightly bumps or ugly lines in horses, dogs or other animals can be improved by knifing or lead pencilling, according to the requirements of the part and subject. Sometimes a sitter may be so posed that the hand interferes with the outline of a dog or cat sitting on the owner's lap, and quite ruins the pictnre. In such cases the hand should be removed entirely if it can be done in such a way as to suggest that the hand is behind the animal or is covered with draperies. The same skill and lightness of touch that are required in the use of the pencil and knife for portrait work are also essential in treating such defects as have been enumerated, for unless such work is done carefully and in such a way that it will not

be apparent in the print, the result will be worse than the defects that it professes to correct, and it would be better not to touch the negative at all.

Etching a Single Figure from a Group

There is one thing that a photographer is very often called upon to do and that is the separating of a single figure from a group. Sometimes it is an old daguerreotype or ambrotype and sometimes a recent print on D. O. P. Usually tbe first step is to make as good a negative as possible by copying, and if the single figure is to be enlarged, it is usually as well to make the single figure a little larger in making the copy. Sometimes a lot of skilful work is called for in separating a figure from the other members of a group.

In Plate XIV we show the result of copying a single figure from a group made from a badly marred ambrotype. Fig. 1 is a reproduction from the original, Fig. 2 shows the first stage of the work, Fig. 3 illustrates the second stage of the work, while Fig. 4 reproduces the completed portrait.

In beginning to do such work as this, the first thing to do is to remove the surrounding objects from around the head and shoulders. In the case illustrated the first thing that was done was the separating of the child's head from the mother's shoulder and giving a natural outline to the waist and shoulders. This was done by first outlining the shoulders with the point of the etching knife and then gently etching away part of the child's face. Then the entire background was blocked out carefully with opaque in the manner described on another page. In a case of this sort it is better to outline the subject first of all with a soft pencil to prevent the out-

line from being too hard, then the rest of the negative can be painted over with opaque or can be covered with black paper. If a film is used instead of a glass plate, the blocking out may be done on the film side instead of on the emulsion and this will tend to make the outline a little softer.

The merging of the lower part of the figure into the background is done by vignetting. An opening is cut in a piece of cardboard the shape of the image on the negative. The edges of the opening are cut like the teeth of a saw in order to blend and soften the junction and make the figure blend gradually into the background without any hard outline. The cardboard is then attached to the printing frame and the opening is covered with a piece of tracing paper to diffuse the light. Another way to diffuse the outline is to have the cardboard vignette separated from the negative about half an inch or so by nailing strips of wood to the printing frame if the sides are not already high enough, and then putting a little absorbent cotton under the vignetter, between the card and the glass in the printing frame, pulling out the cotton in such a way as to permit the light to filter through it and give a gradual blend to the printing.

Of course any retouching that is needed can be done on the negative in the usual way, but it must be done carefully and in such a way that the likeness is not changed. After the print is finished and has been washed and dried, the edges may need to be softened a little by working on the print with a stump or a tuft of cotton dipped in a little crayon sauce. The clouded effect in the background is obtained in that way. This requires only a very little crayon and care must be taken

not to put on too much. This rubbing in of the crayon sauce, softening the lines and slightly clouding the background, completes the picture, as will be seen in Fig. 4.

Straightening Crossed Eyes

Of the corrections that have to be made to eyes in a portrait possibly the most frequent is the straightening of crossed eyes. There is a lot that can be done in the making of the negative to assist the retoucher and save a considerable amount of work if a little care is taken in the posing and the selection of the point of view. It is often possible to photograph such a subject in profile so that only one eye is shown and there is usually one eye that is better than the other. However, if both eyes are to be shown in the picture, one secret of success is to get the straight eye perfectly natural, paying no attention whatever to the other one. If both eyes are crossed, turned in or out, as the case may be, then we must endeavour to get the best position possible for one of them before making the exposure. The most difficult eyes to straighten when making the negative are those where one eye turns in and the other out, for in such cases it is really difficult to ohtain a normal condition of either eye. All one can hope to do is to make the exposure when either eye is at its best and do all the correcting on the negative afterwards.

If one eye is normal and the other needs straightening, first make a tracing of the good eye on a piece of tracing paper and place it on the glass side of the negative over the defective eye. Of course the drawing must be inverted and has to be attached to the negative with the drawing next to the glass. In Plate XV we present

a case of crossed eyes. Fig. 1 of this illustration shows exactly the appearance of the eyes before altering, Fig. 2 shows the first stage of the work done, and Fig. 3 presents the eyes both balanced and which appear very natural.

In beginning the work we first obtain, as said above, a penciled outline of the normal eye on a piece of tracing paper, working from the glass side of the negative. With this obtained, we invert the outline and place it over the opening of the defective eye, attaching the paper to the negative temporarily with a little paste if it is a glass plate or with paper clips if it is a cut film. Then, turning the negative over, with the film side upwards, we trace the outline of the iris of the eye with the point of the etching knife. This completes the first stage, as will be seen in Fig. 2.

We next rub down the white of the eye with reducing paste. This not only reduces the strong whites, but also blends the outlining done with the etching knife. Then we pencil the black portions of the original iris and pupil, building up the white of the eye in the left hand corner. As a considerable amount of work is required to eliminate the heavy black shadows, a very soft lead should be used. When this has been completed, we next proceed to work in the iris of the eye. This is done with the etching knife, shaving the entire opening in the outline of the iris except a small speck to be left to supply the catch-light. With the iris reduced to the proper stage and the catch-light rightly located, we then proceed to etch the pupil of the eye which, in this case, the eyes being very black, should be carried only one shade deeper than the iris. With this done, the eye is completed, as will be seen in Fig. 3.

F. Lawson-Taylor

PLATE II

F. Lawson-Taylor

PLATE III

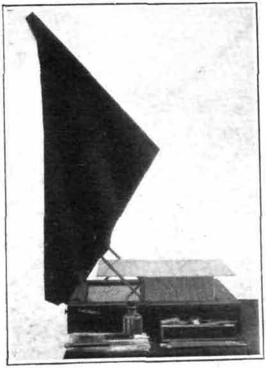
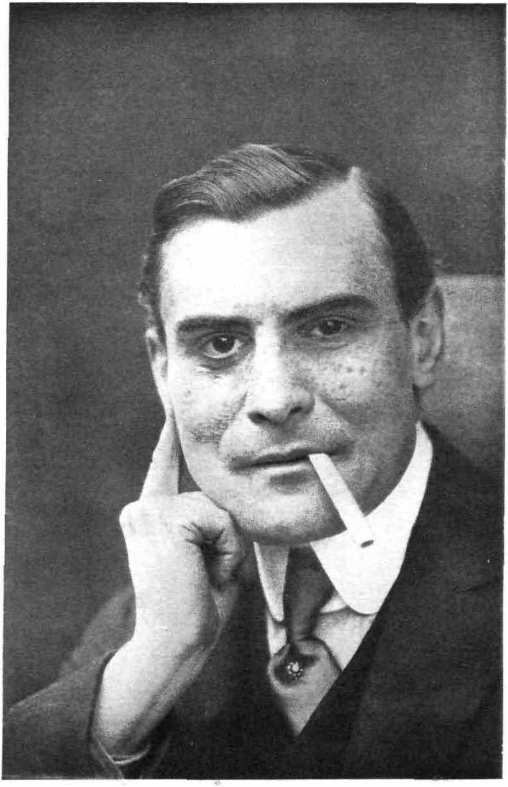


PLATE IV



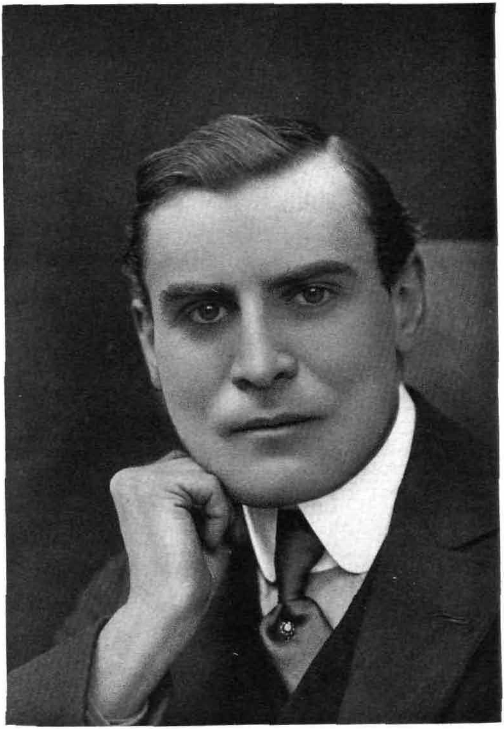


PLATE VI

W. B. Cresswell

PLATE VII

W. B. Cresswell

PLATE VIII

PLATE IX

PLATE X

PLATE XI

PLATE XII

May Bone

PLATE XIII

May Bone

PLATE XIV

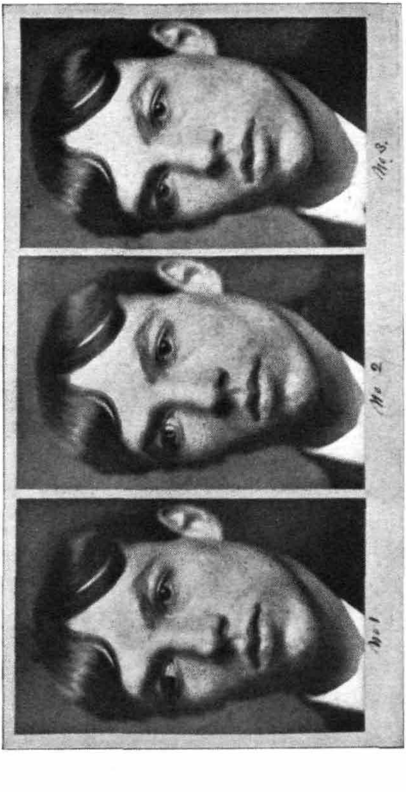
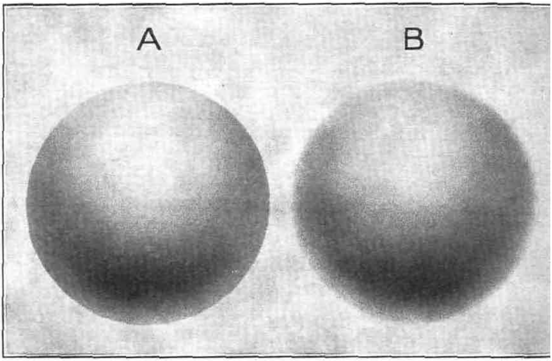


PLATE XV

PLATE XVI



The Aerograph Co., L

PART II

Finishing and Colouring Photographs

CHAPTER VI

Materials for Water Colour Painting — Working up Enlargements in Monochrome — Powder Work — Cloudy Backgrounds — Vignetting — Fixing the Powder — Brush Work — The Hair, Eyes, etc. — Cross Hatching — Stippling — The Scraper — General Remarks.

Materials for Water-colour Painting

For colouring photographs in water colours the student needs to exercise a little care in the selection of his materials. As one artist may work on the same subject in a different key from another, so he may also use, in part at least, a different set of colours. But the following list will be found suitable and reliable. Colours that are very fugitive have not been included in this list.

Chinese White	Lemon Yellow
Light Red	Naples Yellow
Vermilion	Burnt Sienna
Rose Madder	Lamp Black
Alizarin Crimson	Indian Red
Cadmium	Emerald Green
Yellow Ochre	Prussian Blue
Raw Sienna	Permanent Blue
Indian Yellow	Cobalt Blue
Gamboge	Raw Umber
Roman Ochre	Warm Sepia

All of these colours can be obtained from a dealer in artists' supplies.

It will be necessary to provide oneself with a high easel, mahlstick, several palettes of one kind or another,

sable brushes, a scraper, various rubbers, among which is a hard typewriter eraser. All these things may be placed on a table on the right of the easel.

Sit or stand so that the light falls on the picture from over the left shoulder. Work in a cool light, as nearly as possible from the north, at a window that is sufficiently high and that is fitted with shades that can be drawn either up from the bottom or down from the top. The lower shades should be drawn up so that the light starts at a height of about five feet or so from the floor, provided the window is high enough to allow of this. The strength of the light must be regulated according to circumstances. It should not be so strong as to be dazzling, nor should it be too weak.

Good brushes, preferably sable, are indispensable — the writer prefers flat sable brushes. The brushes are better to work with when they are just a little worn, but the extreme tip of a new brush — it may be only a single hair — may be cut off very carefully with a sharp knife. A No. 12 fitch brush is useful for washes.

Working Up Enlargements in Monochrome

"Finishing" an enlargement may mean much or little. It may mean highly finished work, carefully studied, and necessarily requiring considerable time in its execution; a finish of this degree is usually required in the studios of the higher class of photographers. As between what may be termed this maximum of finish and the minimum, there are various shades or degrees that vary "according to the price." A minimum finish may mean merely putting in a background, either with powder-colour or with the air brush, and a slight, general touching up and spotting of the enlargement.

The writer will assume that the aim of the student is to do good work and to do it in the spirit and with the feeling of an artist. It will be obvious that artistic work can proceed only from artistic thought. Every stroke and every touch must have its reason and be a means to an end, not an end in itself.

Various methods may be employed in the working-up of an enlargement. Pure brush work is not now as general as it was, though it must continue to be of prime consideration in many cases.

The colours required for monochrome finishing are few, chiefly black and various shades of brown. For ordinary black or grey bromides, carbons and platinotypes, lamp black is generally used. The student must decide for himself the colours that he will use — but we may mention that for practically all shades of brown, including any shade of sepia, or of the ordinary " photographic " colour (as in redeveloped prints on developing out paper) and even for Bartolozzi red, it will be found that combinations of black, burnt sienna and Indian red, will provide, mixed in proper proportions, any tint required to match the tone of the print. The mixing must be done with care and nicety. For sepia tones of great variety, lamp black and burnt sienna will be found to suffice in most cases, but in some instances a little Indian red may be required to be added, especially for carbons. A little Indian red added to lamp black will give what is known as a " warm black." Black and Indian red with a dash, it may be, of burnt sienna, will produce various shades of photographic colour. For sepia enlargements, sepia (warm or ordinary) may be used at the worker's discretion. It may require modification in some cases, to give the exact colour.

It is important to the artist as to everybody concerned that all prints for finishing should be of the best possible quality, not weak or underdeveloped, but strong and brilliant prints, properly exposed and fully developed. Bromide enlargements, even those made by firms which, by reason of their standing and the quality of their work, charge higher rates than others, are nowadays so cheap that it would seem hardly profitable to get inferior prints for the sake of saving a few cents. Of course the higher class of professional photographers may be trusted not to do this; they see to it that their artists shall have the best possible enlargements to work upon.

There are methods of working by which a weak print may be strengthened and improved, but speaking generally, and without reference to those who make airbrush finishing a special and almost exclusive study, we do not advise that the quality of the enlargement, the detail, the light and shade, should ever be sacrificed to "methods." Let the enlargement be as good as possible; the artist will still have plenty to occupy him.

It is pleasant to preach a doctrine of perfection, and still more pleasant, though more difficult, to put it into practice; but unhappily the artist is too often "cribbed, cabined and confined" by the reluctance of many people to pay a fair price for a good thing. So by force of circumstances, it comes to pass that the conscientious artist, whose fingers may be itching to give of his best, has sometimes to glance at the clock.

An enlargement may be finished entirely and throughout with the brush, in which case the background must be washed in, softened at the edges, hatched and stippled until the desired effect is attained. If the face,

hands, or other parts are too white, they must be toned down with soft washes of colour. But this exclusive brush-work is so little in demand for monochrome finishing that it will be safe to assume that it is generally expected that quicker methods will be at least conjoined with brush-work; and the prices for finished work paid by the public are based on that assumption.

The writer feels that he will better meet the practical requirements of the times by not dwelling upon brush-work pure and simple, important as is the part which must always be played by the sable brush.

For backgrounds, faces, draperies, etc., the air brush and powder-colours are now used almost to the exclusion of anything else. They are so much quicker, so clean and smooth in hands which have become skilful. But, though quick, they, too, as well as brush-work, though in a lesser degree, take time. Things at best cannot be done with a wave of the hand. The artist working professionally must have a thorough knowledge of these methods if he is not to be left behind in competition with others. If others use the air brush, he too must have one and must be expert in its use. It may be added " she " also, for the work is falling more and more into the hands of ladies.

In working up an enlargement, choice may be made as to the treatment of the backgrounds, faces, draperies, etc., between the air brush and powder-colours, or the two may be combined, each supplementing the other, and either or both may be combined with brush-work.

Powder Work

Powder treatment must have its due recognition, as it has certain advantages, both for monochrome and

colour work. It may be mentioned in passing that practice in this method is a good foundation for a proper subsequent understanding of the use of the air brush, as the effect of both is in many ways not dissimilar.

We will now suppose that the enlargement is fixed on the easel and that the work begins. It may be a large vignetted head — fourteen by seventeen or larger — of a lady in white or light drapery. There should always be a guide print for reference, preferably a contact print from the original negative.

First prepare the surface by rubbing it over either with fine pumice-powder or powdered French chalk, or Matt-Surface Powder, using a pad of absorbent cotton. This removes possible grease marks. The loose powder should be carefully dusted off with a soft, dry cloth. It is only in certain cases of very obstinate " greasy " carbon prints that the aid of ox-gall is required, but it is rare to find a carbon print which will not yield to vigorous rubbing over, especially if powdered French chalk be used.

Assuming that the enlargement is a grey or black bromide, for powder treatment Winsor and Newton's blue-black is recommended. It is sold in bottles. It is cooler in tone than lamp black and is as nearly as possible the tint of the ordinary grey bromide, especially after fixing. The method of fixing powder-colour will be explained later. This black does not require any admixture of a cooling tint. It must be well and thoroughly mixed with pumice powder not too fine in grain, but not too gritty. Plenty of pumice powder should be used, especially for backgrounds and the toning down of too white faces and light draperies. Where deeper tones are required, the proportion of pumice

powder would be less, as the greater the amount of that powder employed, the lighter is the effect: so that toning down can be done in any gradation, darker as the case may be, or lighter almost to the point of invisibility. The powder may be mixed in the shallow lid of a cardboard box. It should be rubbed on with a pad of some soft material, absorbent cotton being perhaps the best thing to use.

Cloudy Backgrounds

In putting in a vignetted background begin over the shoulder on either side where the tone would usually be deeper, and then graduate upwards and outwards, softening off very carefully to the edges of the vignette as the pad becomes decreasingly charged with powder. Then rub in the loose powder with the tip of the finger, or with more than one finger, filling in patches or darkening where required. This finger work will be found to give a grain more or less, sometimes very pleasing and resembling a stippled effect; but this will depend to a great extent on the grain of the paper that is being worked on. Patches of loose powder may be removed or at least softened with a dry sable brush. In addition to finger work, for large surfaces, the flat side of the hand may be employed, but usually the fingers are sufficient. A flat, rather large camel hair dusting brush is a practical necessity for removing loose particles of any description.

Vignetting

Great care should be taken not to spread out the vignetting too far on either side, and to see that both sides properly balance each other. Nor should the

vignetting go too high over the head, sometimes not over the head at all. Backgrounds should be soft and atmospheric, with a receding effect. There is much scope for taste and fancy in their treatment, but not always has the artist liberty to do what his feeling might suggest; there is commonly a background more or less vignetted already in the enlargement, and that must be taken as it is and made the best of. Fancy, and artistic fancy be it added, sometimes runs to having no background at all, or but slightly at the base of the figure. But fancy may also suggest wild, storm-driven clouds encircling the head of a placid looking lady in evening dress! There is always scope for the imagination, but limits must be observed.

Faces, hands, arms, grey hair, etc., as well as light draperies, can be toned down either slightly or considerably, in any degree required, by the powder method, which may also be applied in some cases to darker draperies, at the discretion of the artist.

Having completed what effect can be obtained in the manner described above, the next stage is attention to the highlights. As the powder-colour is easily removable, it will be found that small sticks of eraser, pointed at both ends, with some soft " art-gum," a piece of white kid and an etching knife such as that marked No. 2 in Fig. 2, to use for final and sharper touches, will readily clear up all the highlights over which the powder has passed, such as the lights on the nose, lips, forehead, grey hair, reflected lights, draperies and accessories. The harder pointed eraser is the most useful: it should be sharpened (with a circular movement) on a piece of rather rough sand or glass paper. The soft eraser should be cut across so as to form triangular pieces and

the sharp corners reduced by rubbing them down on paper or cardboard.

The effect of a "clouded" background, as distinguished from a merely graduated one, is obtained by "picking out" the edges of the vignette in such a manner as to suggest the soft, broken edges of clouds, though not necessarily an exact cloud effect. To get this impression, pick out, but within limits, the edges with soft rubber, not in a stiff, abrupt manner, but more or less on the curve. This is, of course, as so much else, more difficult to describe than to demonstrate. The picked out portions should be dusted with the flat camel-hair brush and will usually require softening more or less. This can be done with a tuft of cotton, sometimes with the tip of the finger or with a bit of fine muslin. This picking out must be done with taste and judgment, otherwise it would be better not to do it at all. When well done it helps to give style and atmosphere to a background. Sharper definition of edges may be given with the harder pointed rubber.

It will not be necessary to add that plain or solid backgrounds may equally well be treated with powder-colour and with erasers. This powder method is applicable obviously to all descriptions of subjects, outdoor as well as indoor; for example, clouds may be added to a landscape picture (a piece of a kid glove is very useful for this) and strong highlights may be toned down, such as are often found in enlargements made from amateur snapshots taken in strong sunlight.

In the preliminary toning down of a face that is too white, or of other such parts of a picture, it is well to bear in mind that when the darker portions of a portrait, such as shadows, hair, eyes, nostrils, mouth and dark

draperies, come to be treated — darkened or strengthened — the face will be apt to appear whiter by contrast. This may be considered in advance.

Fixing the Powder

When all the powder work is completed, the next stage before proceeding to brush-work is to "fix" the loose powder. There are several ways of doing this, but it is best done either with the air brush or by steaming, or with an atomizer that sprays a liquid specially prepared for the purpose. If the fixing is done by steaming, a hronchitis kettle is best. It has a long spout, but if there is a fan shaped diffuser on the tip of the spout, this had better he taken off. An air brush is equally good for the purpose, its fine spray of moisture being practically the same as steam.

Steaming has the effect of so moistening the surface of an enlargement, as well as the powder, that the latter adheres and loses its powdery character. It also has the effect of slightly but appreciably cooling the tone of the powder (as has also fixing with the air brush). This must be taken into account in the case of sepia or other warm-toned enlargements, and a suitable allowance made for it.

In fixing by steaming it is necessary to have sufficient heat to make the kettle boil briskly, so that an ample volume of steam may be emitted. Hold the enlargement faee downwards over the cloud of steam, but not too near the end of the spout. Move it around with a circular motion so that the steaming is equally and evenly diffused all over the print. Do not steam the picture too much. With a little experience it will be easy to tell when the fixing is complete. A touch of the finger will

show this. Then dry the print, but do not dry it too rapidly.

Fixing with the air brush is very much the same. A few drops of water to which a little mucilage has been added can be added to the water in the air brush cup. Too much mucilage would give a perceptible gloss to the print, but a little of it tends to hasten the fixing.

The effect of fixing by these methods is to reduce the powdery appearance: it might almost be said that the powder-colour has now become water colour. After fixing there will be no difficulty in doing additional work on the print with a brush.

Brush-work

On the assumption that the enlargement is of good quality, it may generally be taken that quite thin, transparent washes of colour, mixed with a little gum arabic solution, will suffice to give sufficient depth to shadows, hair, draperies of the darker kind, including black cloth or black velvet coats — subject, of course, to stronger strokes and accents that may be added afterwards. These thin, flat washes may be carried over the shadows of the face, eyes, hair, etc. But there must not be too much colour and the gum water must not be too strong.

In the case of three-quarters or full length portraits, any accessories which are in a line with, or immediately behind the figure (such as chairs and tables) should also have these washes, as otherwise, and obviously, they would appear weak by contrast. This treatment will be found to bring out the head and figure from the background which, being softly treated and free from gum, except in certain cases at the base, will tend further to recede and become more atmospheric.

THE HAIR, EYES, ETC.

The pupils and general details about the eyes, nose, mouth, hair, draperies, etc., may next be attended to and these will require a sure and careful touch in their treatment. The shadows of the hair may be strengthened where necessary, care being taken not to overcharge the brush with colour, which would tend to hardness. Thin, wiry lines in the hair should be avoided, though in some cases a little extra definition is demanded, as where the hair in places is out of focus and therefore not quite in keeping with the rest of the portrait. Stray bits of hair may need to be worked out or modified and there may be touches required here and there, but, speaking generally, the hair does not call for anything like elaboration in monochrome finishing.

The pupils of the eyes must be sufficiently defined, but on no account be too black and bead-like, and they may be made in some cases — especially with children — slightly larger than they appear in the photograph, as there is a tendency for them to contract a little in a bright studio light and still more so if the picture has been taken in a strong outdoor light. The greatest care must be taken with the iris of the eye, with the eyelids and the eyebrows, or false effects may easily result. In some prints it may happen that the eyelid catches the light too much. It should be toned down with the brush. Care should always be taken not to do too much to the eye lashes, as an artificial or "doll-like" effect may too easily be given. Speaking generally, eyelashes should be only suggested and never clearly defined. The eyebrows require care and must not be strengthened to excess or they would become untrue in

effect. They demand soft treatment, avoiding a strongly marked or pencilled appearance.

Cross-hatching

Cross-hatching for high class work is an important method, but it is not demanded as much now as in past years, for reasons which do not reflect on its value when well done, which is not too often. It is a method of brush-work which is at once easy and difficult; easy when done merely mechanically, difficult when done artistically and with feeling. For backgrounds it must be soft and free: it is not pleasing in hard, stiff lines. It should be done with a brush sufficiently large and somewhat worn at the point. It can be softened in parts with a pointed eraser. Soft, broad cross-hatching in backgrounds may conduce to an added effect of atmosphere. It is good for faces and draperies, but it must be put strictly in its right place.

Stippling

Stippling with the sable brush must always compel consideration, though there are now aids to it and substitutes for it that in past days were unknown. It is a combination of soft stippling touches and hatching, and applies not only to the face and hands, but more or less to other parts, such as patchy draperies and backgrounds, and sometimes a little to the hair. In rough copy enlargements from old, small, faded photographs, there is generally enough of it required to make the most ardent stippler happy for a great part of his working day. Stippling gives the final effect of softness and finish. But it must be done only where artistic feeling suggests. Too small a brush should not be used for the

general stippled effect, though, of course, a smaller one would be necessary for little spots and retouching marks. If there are many of the latter, it may be well to clear at least some of them away with a retouching pencil, a black chalk crayon such as is specially made for use in working up enlargements and has no gloss. The pencil must be finely pointed. Such a pencil will be found very useful for spotting black and white prints of all kinds, either contact prints or enlargements.

In stippling the brush should on no account be over-charged with colour, which should generally be thin and transparent. The colour should not be too wet, but yet sufficiently so to hold the hairs of the brush well together. Artists naturally vary in their touch and something must be left to individual feeling or tendency. Speaking generally, one would stipple a face according to the suggestions it offers in the print as to grain and texture, filling in the interstices and patches and "smoothing up" generally.

It is necessary in stippling to sit or stand well back from the easel, so that the light and shade, the "hills and valleys" of the face, may be seen in due perspective and be the better appreciated. The eye will the more readily perceive where the work is needed. No one part of the face should be fully stippled before proceeding to other parts. If done too near, the effect of the stippling will appear uneven when seen at a proper distance, which may be greater or less, according to circumstances, but often at a near approach to an arm's length. It would not generally be done with the extreme tip of the brush, but with a more or less flattened point, so as to get the touch soft, diffused and open, with an eye all the time on the general contour of the face, as well as all detail.

It may be borne in mind that in many enlargements from negatives which have been well retouched, there is not a little stippled grain with which the brush stippling will merge. The general effect when finished would still be that of brush stippling. The scraper may also in some cases largely contribute to the stippled effect.

The Scraper

The scraper is so important that it may be said to be practically indispensable. The writer uses the No. 2 knife, as shown in Plate V, and finds it very satisfactory. It must be kept carefully sharpened at the point, using a smooth oilstone.

Surfaces, especially those of bromide papers, vary and some take more kindly to knife work than do others. Given a surface which is responsive or even moderately so, the scraper will remove or clear up dark spots or patches about a face, whether of colour or such as may he in the original print. It can be used on backgrounds and other parts and for the sharpening of highlights and reflected lights. It must be used patiently but with a light hand, not digging into but deftly and lightly shaving the surface, in just the same way as a knife is used on a negative.

General Remarks

It does not enter into the scope of this book to give pre-eminence to any one method of working, but rather to indicate the different methods which may be of practical service to an artist who has to meet the varied requirements of up-to-date photographic studios. There is no thought here of discouraging brush-work. But what practically results in most cases is that various

methods are worked in one with another, each for what it is worth in any given case, whether in monochrome or colour.

There are some enlargements that lend themselves easily and invitingly to air brush treatment; prints that are of a rather chalky nature with strong shadows and clear highlights. The scraper, pointed erasers and occasional touches with crayon pencil or brush all would combine with the air brush work. The air brush has become a practical necessity to most, if not all, professional workers.

In working up rough copies with a coarse " copy " grain, say, from an old, faded photograph, there are cases where something appreciable must be done to clear the way by the use of powder-colour over the drapery and background especially, as it tends more or less to cover the rough marks and patches: the same remark would apply to the use of the air brush. General brush-work and spotting would then follow. But there are some cases of copy enlargements where neither powder-colour nor air brush will help much, if at all.

In working up copy enlargements, the artist should always have, if possible, the original photograph from which the enlargement has been made, as a guide, for " keeping the likeness " in such cases is of paramount importance.

When an enlargement is made from a weak original, perhaps out of focus, with little, if any, clear definition of the eyes and other features, but still with the *suggestion* of a likeness, too much should not be attempted in the direction of "sharpening-up," as otherwise what likeness there is may be lost. The greatest care and judgment are necessary in such cases and even then com-

plete success is not always assured. Enlargements from amateur snapshots are not uncommon in this connection.

In finishing enlargements of outdoor subjects, such as a lady sitting in a garden, or a family group with perhaps a background of foliage, the first consideration is to give increased value to the head and figure, and to subdue any strong points of light that may appear in the background. It may happen that such points of light come close to the head and these at least should be softened and subdued as they may otherwise tend to confuse the outlines.

When an artist is engaged on a number of enlargements, it may be advisable not to go straight through with one before beginning another, but to finish them in stages. This gives relief to the eyes from too long dwelling on one subject.

The subject of working up enlargements is a wide one and these remarks could be greatly amplified. The writer well remembers the first correspondence lessons he gave; he was amazed at the amount of matter there was to write about.

In these pages he has endeavoured to be as simple and as intelligible as possible. The methods described are generally indispensable, but they must be well mixed with brains; and to overdo any method, however quick in itself, is not to save hut to lose time.

Much may be learned by the study of good engravings, reproductions from paintings by eminent artists, and generally by keeping the eyes open.

CHAPTER VII

The Use of the Air Brush — Description of the Air Brush — Air Supply — Position at the Easel — Colours — Preparing Colours — Preliminary Practice — The Principle of Air Brush work — A Hint as to Roundness — Use of Frisket Paper — Working up Portraits — Working up Landscape Pictures — Cleaning the Air Brush.

The Use of the Air Brush

There is an instrument with which colour can be applied to photographs of all kinds, in large even washes, in a comparatively short time; with which colour can be applied to any surface, matte or glossy paper, film or glass, with equal facility; with which backgrounds can be worked in, either on the negative or on the print; with which beautifully and evenly graded vignettes can be made, on the negative or on the print, with surprising ease, and with which highlights can be accentuated and built up on the negative and on either side of the negative. This instrument, which is now very extensively used in modern studios for a variety of purposes, is the air brush.

Description of the Air Brush

The air brush is a mechanical tool of rather delicate construction and before it can be used successfully its mechanism must be thoroughly understood. The principle of the air brush is very similar to that of the sprayer. There are two valves in the air brush, so arranged that by means of a current of compressed air a fine spray of

colour is projected upon the surface to which it is to be applied.

One valve of the air brush is a needle valve which, when open, allows the colour to be projected by means of a jet of air; the other is the air valve, opened by means of a plunger which is operated by pressure of the finger. On most of the latest models of the air brush, these two valves are controlled by the same lever.

A downward pressure on the lever opens the air valve and admits a current of air from the pressure tank, the volume of air being controlled by the amount of pressure applied. A backward motion on the same lever controls the needle valve and by means of this needle valve the amount of color can be regulated. It may be either a fine, hair line or a fairly broad spray according to the extent to which the valves are open.

The application of this spray to the surface that is being worked on can also be varied according to the distance at which the brush is held from the surface. In this way a skilled air brush operator can apply colour either in well defined lines or as an evenly diffused spray, according to the effect to be produced.

Both of the valves of the air brush can be regulated and adjusted for fine lines or for broad spraying at the discretion of the operator. As the needle valve has only a very small opening, the colour must be free from grit and dirt or the tip will become clogged and the colour will not pass through. This can be remedied by cleaning out the tip by running warm water or alcohol through the tip or, if that fails, by using a reamer which must be used very carefully to avoid bending the tip.

There are several different makes of air brushes. All of them are good and though they may vary a little in

the details of their construction, the general principles are the same in all of them.

The air brush was invented by Charles L. Burdick of Chicago in 1892 and was introduced into England a year later, where it is known as the Aerograph.

Air Supply

There are several methods that may be used in supplying the air for the brush. Either an automatic pump electrically controlled or the liquid carbonic gas outfit can be recommended. It is very important to have the air pressure uniform. The amount of pressure is not so important as long as it is even. Details and complete working instructions accompany each machine. When using the liquid carbonic gas tanks you will have to have, in addition to the tanks, a pressure reducing gauge to reduce the high pressure coming from the tank to a suitable working pressure for the brush.

From this pressure gauge the air passes through a rubber hose into the brush where it is held until a downward pressure on the distributing lever allows it to pass through the air duct and into the air cap, where it passes through three small openings into the colour tip and thence through the valve onto the paper. The air creates a suction which draws the colour from the colour cup into the colour inlet, thence around the needle and out through the colour tip to the surface that is being worked on.

Position at the Easel

The position at the easel should be such that you can sit upright and in a comfortable position. The brush must always be held at right angles to the work on the

easel, otherwise you will not be able to control the application of the colour.

Colours

The colour to be used in an air brush must be of the finest grade and must be absolutely free from dirt or grit. There are several firms that prepare colours especially for use in the air brush. Such colours are readily obtainable from any reliable firm handling artists' materials. If you are not sure of the colour, it should be strained through fine muslin before being used in the air brush, for a little grit in the colour might cause you a great deal of trouble.

When you are practising with the air brush and are learning how to use it, it will be best to use lamp-black or colour that is not waterproof so that you can use the same photograph several times. You can wash off the colour with water and do the work all over again, whereas, if you were using waterproof inks you could not wash off the colour. Therefore if you were to make any mistakes you would have to get another print to work on. In working up enlargements or other photographs professionally, however, it is customary to use waterproof colours, as they are far more permanent, and such pictures are usually hung on a wall, where fading will soon become evident if poor colours are used.

For colouring photographs with the air brush or for working up enlargements in monochrome, you can use either the specially prepared liquid colours or you can mix the colours yourself. Permanent colours should be purchased in pans. A number of one ounce vials will also be needed, each one carefully labelled with the name of the tint for which it is to be used.

Preparing Colours

Remove the colour from the pan in which it comes, break it up into small pieces, and put it into the bottle prepared for it. Then pour about half an ounce of distilled water into the bottle with the colour.

When the colours are thoroughly dissolved, each one must be carefully strained through a piece of fine muslin to eliminate all grit. Place a piece of muslin over the top of a clean bottle or other suitable receptacle and filter each colour through a separate piece of muslin. As each colour is filtered, rinse out its bottle and pour the colour back into the bottle. This colour is then ready for use after diluting to the required strength.

The colour can be diluted for use in the air brush by putting the colour into the colour cup on the air brush and adding water. If you use a brush to stir the colour in the air brush colour cup, you must be sure it is one that does not shed hairs, for these hairs would clog the brush and cause you trouble.

Air brush artists who do work requiring the use of several colours usually provide themselves with several colour cups for the different colours. This saves time, but it is not absolutely necessary, as the cup can be very easily and quickly cleaned without removing it from the brush.

Preliminary Practice

The first thing to do in learning to use the air brush is to practise making good, even lines. Attach a sheet of clean, white paper to the easel and draw on it, with the air brush, a series of horizontal lines. Try to make these lines as even as possible in width and density. This

will teach you how to control the brush and how to start and finish a line without there being a dot at the beginning and end of the line.

The secret of success in making such lines is to start the movement of the brush before opening the valve and to stop the flow of colour at the end of the line before stopping the movement of the brush. This needs some practice and it is very important that you should acquire this knack and that it should become almost instinctive, otherwise it will not be possible for you to do good work.

The fineness of the lines is governed by the distance the brush is held from the paper when making the lines. The closer the tip of the brush is to the paper, the finer the line will be. For very sharp lines the point of the air brush may even rest on the paper if the brush is held at a slight angle.

If work is being done on a small photograph or drawing and fine, sharp lines are needed, the brush may be set for a fine line by means of an adjustment for that purpose which will be found on most of the popular makes of air brushes. The instructions that come with the instrument will explain how this may be done. Some artists use a stick or a rest for the hand while making lines and no doubt this is useful at times, but the little finger of the hand holding the instrument may rest on the paper, and the other hand can also be used, if necessary, to steady the air brush.

There is no doubt at all but that it is a good deal more difficult to learn how to use the air brush for making lines than it is to learn how to make tints and even washes of colour, but when once the technique is mastered, it will be found that it is possible with the air brush to get lines

of varying degrees of softness and with a quality that no other artist's tool can give.

After having practised making good, even lines, try to make a series of dots of an even size and density. Then practise making circles and curved lines. In making a circle some practice will be needed to make the ends of the line join neatly and without showing where they join.

When you have acquired the knack of controlling the flow of colour so that you can begin and end a line without any thickening of the colour at the beginning or end of the line, and can make lines that are even throughout their entire length, then try to make an even spray, tinting a circular or rectangular area with an even wash of colour so that it is perfectly smooth and even.

The Principle of Air Brush Work

The colour leaves the point of the air brush in a gradually expanding spray or, in other words, the colour which is in the air forms a cone with its base on the paper and its apex at the point of the instrument. It is obvious therefore that the farther from the paper the brush is held the broader will be the surface covered. This, with the fact that the amount of colour delivered through the point of the air brush determines the depth of the tint or line, is, broadly speaking, the whole theory of its application.

But there are many points of consideration which must be understood in order to make practical application of the method. For instance, the air brush does not make a flat and even tint unless the colour is applied in overlapping strokes. This is best explained by means of the diagram. Let Fig. 3 represent diagrammatically,

in cross section, the layer of colour deposited on the paper with a single stroke of the air brush. The colour is deeper in the centre and decreases gradually in depth and density at both edges and so, in order to make a flat tint, it is necessary for the strokes to overlap, as shown in Fig. 3. This will produce a tint that is sufficiently even in tone for all practical purposes. It is obvious from this that in order to make a good, even tint, the artist must make definite strokes with the air brush — just as

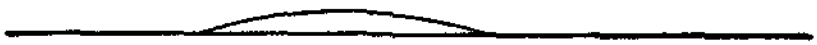


FIG. 3

The Aerograph Co., Ltd.

FIG. 4

the water-colour painter does with his brush — and the strokes must be parallel and overlapping. It is impossible to get an even tint with an aimless, circular motion, for, wherever the lines crossed, the colour would be deeper, and a very uneven result would be secured in that way.

To practise spraying, it is a good plan to cut an opening about three or four inches square in a piece of stiff paper or celluloid and place it over a piece of white paper. Then try to blow in this square with an even wash of colour. Open the valve a little, so that you will get a good, wide spray and, holding the brush about six or eight inches from the paper, work with a swinging, freearm motion across the opening, at an angle of about forty-five degrees. Keep your finger on the valve and control the colour so that it flows only

while the brush is in motion, shutting it off at the end of each stroke. Apply the colour lightly at first and gradually add colour until the required depth of tint has been obtained.

A Hint as to Roundness

It is not possible to get a really sharp, clean-cut edge in air brush work unless a protective mask or template is used, and it is just because of this that it is possible to get with the air brush the slightly diffused outline that tends to convey an impression of solidity and roundness. Except for special effects, it is generally advisable to keep the outlines soft. The camera sees with only one eye and when the picture is sharply focused, the edges and outlines are inclined to be crisp and hard. But people look at objects with two eyes and therefore every rounded object presents two outlines to the spectator. You cannot make two outlines in a portrait, but you can give a slightly diffused outline which will go a long way towards conveying the impression of roundness and solidity.

That is just the reason why many pictorial photographers like to use a lens that is not fully corrected and in which there is left a slight degree of chromatic aberration. Such a lens will tend to soften outlines and edges and will therefore give a better suggestion of roundness and solidity. The air brush gives soft edges and this is something that can be used to advantage by the artist.

Plate XVI shows two balls which, if the printer and engraver do justice to the reproduction, will show this point. A looks like a hemisphere that is rounded on its face and flat at the back, while B looks like a sphere or ball, round on all sides. One appears to be adhering to

the background and the other has atmosphere all around it and has roundness and solidity. In both the shading is practically the same and the only difference is in the outline. In A the outline is sharp and clean-cut, while in B the outline is diffused.

Use of Frisket Paper

It is sometimes necessary to get a sharp, clean-cut edge when working up some kinds of commercial photographs with the air brush and in order to do this a mask, cut out of celluloid or tough paper, is held in contact with the work. Sometimes a thin, tough paper known as "frisket paper" is used to protect the parts of a drawing or photograph that are not to be worked on or that are to be worked on later in a different colour.

The frisket paper is usually attached to the photograph or drawing with rubber cement and then the part that is to be worked on is uncovered by cutting away the frisket paper with a sharp pointed knife. Of course the cutting must be done very carefully, so that the knife does not go too deep and cut the picture. The frisket paper is transparent and the picture under it can be seen sufficiently clearly to serve as a guide in cutting. After cutting and removing the paper, the rubber cement can be easily rubbed off with the finger tips. This cement is quite harmless and will not damage the most delicate photograph or drawing.

Commercial photographs are often worked up very extensively by means of the air brush and masks of frisket paper are used. Sometimes a piece that has been cut out is again replaced after that part of the photograph is finished, and another piece of frisket paper is cut out and removed. In this way different parts of the picture

can be worked up in different colours or different shades of the same colour, and clean-cut edges will be secured.

An enlargement to be worked on with the air brush should be mounted on a good, stiff mount, preferably by the dry mounting process, so that it will be perfectly flat.

Working up Portraits

For working up a portrait with the air brush it is rarely necessary to use frisket paper. It is not necessary to cover the face and figure when blowing in a light background. With a little care you can work around the face without getting much colour on it. Even if a little colour does get onto the face, it will probably not be noticeable.

The addition of a suggestion of clouds to a plain, white background is comparatively simple after some skill has been acquired in the use of the air brush. Usually only a very light tint is needed, but the brush must be properly handled so that the flow of colour is properly controlled. The colour must be even and must be nicely blended at the edges.

Working up Landscape Pictures

Landscape prints can often be much improved by spraying in a suggestion of clouds on a blank sky. Sometimes the foreground needs to be darkened a little and scattered highlights toned down. Very often only a little work is needed to improve a picture very much.

In addition to working on the print, you can also work on the negative, and on either side of the negative, whether it is film or glass. Parts that print out too dark can be held back with a light, even wash applied on the

glass side of the negative which may be wiped off where it is not needed.

Cleaning the Air Brush

It is very important always to keep the air brush perfectly clean, otherwise it will be impossible to do good work. If colours are used, the brush must always be carefully cleaned after using. Colours often contain a little gum which becomes very hard on drying, so if colour were allowed to dry and harden in the tip of the air brush it would be very hard to clean it.

Cleaning should be done as follows: immediately after using the brush and before the colour or waterproof ink has had time to dry and harden, open up the valves and then clean the colour cup thoroughly. Fill the colour cup with clean water and run it through the brush. Do this several times. After a thorough washing with water, remove the needle and draw a thread of fine silk through the tip to clean it and to remove any adhering colour. Flow one or two cupfuls of water through the brush while the needle is removed. Then blow air through the brush till it is thoroughly dry. Then replace the needle, being sure that it fits properly, and pass a little more air through the brush. Then turn off the air, disconnect the brush and replace it in its case.

An expert air brush artist should never have any difficulty in finding employment, for there are many other uses for the air brush besides in working up photographic enlargements. The air brush is used very extensively in show-card writing, in staining and gilding picture frames, tinting and dyeing fabrics and feathers, in china painting and in bookbinding. A special form of air brush is used in finishing automobiles.

CHAPTER VIII

Colouring Enlargements in Water Colour — Colour Terms Explained — The Kind of Print that is Best for Colouring — Brush Washes — Flesh Tints — The Eyes — Shadows, etc., on the Face — Colouring Hair — Draperies.

Colouring Enlargements in Water Colours

As much in the foregoing pages dealing with monochrome applies also to the methods of colouring, it will not be necessary to repeat everything which has already been stated.

In order that colours may be used intelligently, it is necessary for the colourist to know a little about colour and colour combinations. There are actually only three primary colours, namely, red, yellow and blue. All other colours, shades and tints are made up of one or more of these primary colours in varying combinations. When two primary colours are combined, the result is what is known as a secondary colour. When yellow and blue are mixed together the result is green, and the green varies according to the proportions of yellow and blue. It may be a yellowish green or a bluish green. Red and yellow when combined produce orange, and red and blue make purple. Green, orange and purple, then, are secondary colours.

When secondary colours are combined, we get tertiary colours. Thus, orange and purple mixed together make brown. Green and orange in varying proportions will give varying shades of green — olive green, bottle green and so on. Therefore, with only a very few tubes

tional cases, to use Chinese white for the lights of a face.

The Eyes

Cobalt blue is a suitable colour for blue or blue-grey eyes, with modifications. Pure blue eyes hardly, if at all, exist, except in the imagination of those who are convinced that they possess them! In such cases it may be judicious to do — at least — not less than justice to the eyes. It need hardly be pointed out that in treating the "whites" of the eyes, there is generally in children and younger people a faint tinge, slightly inclining to blue, which diminishes as age advances.

For brown eyes of various shades, burnt sienna comes in usefully, again subject to modifications. Of course the colour of the photographic basis of the print has to be considered and allowance made accordingly.

Shadows, etc., on Face

For emphasizing the lines of the eyelids, nostrils, lips and the deeper shadows of a face, burnt sienna mixed with alizarin crimson may be recommended. For giving additional warmth to dark shadows, orange chrome mixed with vermilion (more or less, according to circumstances) may be used, but this should not be done to excess or the shadows may appear too red where only warmth is required. Cobalt blue will give coolness about the temples or wherever a cooling of the flesh tint is required. In many subjects, especially old or elderly people, there is just a suggestion of a green tint under the eyes. The ears in many photographs "catch the light" and are often too prominent on the lighted side. As the ear recedes from the face it ought to be properly

modified, as its highlights are subsidiary to those of the face; it is, in its degree, in perspective. For the shading of halftones a mixture of cobalt blue and raw sienna may be suggested.

For very bright and delicate complexions, and especially if the face in the print is rather dull, Naples yellow instead of yellow ochre may be recommended. It is an opaque colour, but bright. It is good for small tinting and miniatures. For certain dark or olive complexions Roman ochre is good; raw sienna might also be used as an alternative. There are other yellows which might be mixed with rose madder for flesh tints, but there is a tendency in artists, the longer they live, to worry themselves less about "other colours." They are inclined the more to stick to those which they know to be reliable and adequate to their purpose. But, of course, ideas on this point — the choice of colours — vary, and artists might even come to blows over it.

The ability to paint a true and natural flesh tint is a gift of nature and it is to be feared that he who does not posses that gift will not greatly succeed, though meretricious flesh tints are common enough and have a success of their own. But as to gift, he will not know until he has tried.

What is termed a flesh tint is in fact a combination of many tints.

Photographic colourists rarely receive proper directions as to the colouring of enlargements and other prints. Instructions which read: "Fair complexion, blue eyes and brown hair," are not very illuminating. The directions should be more *descriptive.* Far more to the point were some instructions which the writer once received from a photographer who was sending a

picture of a young lady to be coloured: " Hair red, complexion tallowy." The artist understood.

Colouring Hair

In colouring hair there are so many shades, ranging from the palest flaxen to the darkest brown or black, that this part of the subject can be only lightly touched upon. There is no such thing as *yellow* hair, and a too decided suggestion of yellow should be avoided. Various colours may be used for hair, such as sepia, burnt umber, Roman ochre, yellow ochre, burnt sienna, lamp black, etc., more or less modified and often blended. Black with a little sepia will give the effect of very dark brown hair approaching to black. Allowance must be made for the colour in which the photograph is printed. If it be in brown (which is usually the best as a basis for colouring), for dark brown hair, black almost alone might be used. If the photograph is a grey bromide, obviously more brown would be needed if too cold an effect is to be avoided. The highlights on dark hair should incline to a coolness of tone, a suggestion which could be given with cobalt blue.

Roman ochre or yellow ochre is suitable for various shades of " golden " hair, with sepia, burnt sienna or other admixtures which may be required to give the exact colour. In some young children there is occasionally a very light flaxen tint in the hair, partially approaching to white. This may be rendered with a thin wash of yellow ochre mixed with Chinese white, modified at discretion, the deeper shadows being treated with, say, warm sepia and the lights brightened with Chinese white mixed with yellow.

White or grey hair should not be tinted too coldly or

with too blue an effect, and there should be sufficient warmth in the shadows.

Draperies

The treatment of draperies is a large subject. If the enlargement that is being worked on is of a warm colour and the drapery is, say, black or navy blue, the underlying tint has to be covered, subject to such slight suggestion of warmth as may be allowed to remain in even the darkest draperies, at least in the shadows. If black, a mixture of lamp black, or blue black, and prussian blue or indigo, may be used, with a little alizarin crimson to give a slightly purple tint — a tint which helps to reduce the brown basis. As even a wash as possible should be secured, but not with an excess of colour, and Chinese white mixed with lamp black should be introduced into the lighted portions of black drapery. But if treated with the brush alone, much subsequent hatching and working up will be necessary. The definitions of draperies (as in black coats, etc.) should not be too hard, or in too straight lines, but more or less broken.

For pale tinted draperies, such as light blue, heliotrope, pink, etc., some little admixture of Chinese white is suggested where the most delicate light tints are called for. Certain pale blues, as in ribbons and sashes, incline very slightly to green, in which case a little yellow may be mixed with cobalt blue, with or without Chinese white, as may be required.

Pinks vary in shade, some colder and others warmer. There is salmon pink, for example: rose madder mixed with orange chrome will give this.

A cream tint, lighter or darker, can be composed of

yellow ochre mixed with Chinese white, with perhaps a slight dash of vermilion.

Any shade of heliotrope can be made by mixing cobalt blue, or permanent blue, with rose madder or alizarin crimson, and sometimes a little Chinese white for the paler shades.

CHAPTER IX

Finishing Prints in Oil Colours — Characteristics of Colour — The Russian Method of Applying Oil Colours — The Kind of Print for Colouring — Applying the Colours — Portraits — Landscapes — Working up Enlargements in Black and White and Coloured Crayon.

Finishing in Oil Colours

First make a careful selection of colours, brushes, etc. You will need several other small articles, such as pale drying oil, turpentine, knife, eraser, etc. The same list of colours used in water colour painting will do, substituting flake white for Chinese white. But a much greater variety of brushes is necessary. You should have a few large, flat, hog-hair brushes for large surfaces such as plain backgrounds, etc.; smaller ones for hair; stumpy flat ones for painting flesh; long, thin, badger brushes for painting anything that requires a long line; small flat sables for finishing delicate and minute parts; large badger softener for blending colours, and, by the way, this should be used as charily as possible; a tube of megilp; a few rags for wiping brushes, or wiping out any part which you have painted and which does not meet your approval; and a large, flat, wooden palette, either the elliptical or the oblong shape. I prefer the former. Let it be light and pale in colour, but not too yellow. And although the following rule is by no means common, even amongst artists of first rate repute, yet it would not be controverted by the very best; and that rule is: "Always keep your brushes and

your palette clean." See that after setting your palette you do not put the caps on the wrong tubes; clean all the waste colour off your palette after a day's painting; wash your brushes in clean turpentine; wipe your palette knife; keep everything scrupulously clean; make a habit of it and you will never regret it. The comfort of commencing a day's work and finding everything clean and in good order cannot be overrated.

To commence a portrait in oil, if the photograph is printed in carbon on the canvas stretcher, first cover it with some priming, such as a wash of very thin starch with mucilage in it, and when it is dry, begin by setting your palette, thus: flake white in the corner nearest your thumb; next, yellow ochre; and so on, making the colours deeper in tone as they get farther from the white. Colours that are similar keep together, such as the reds, the blues, the yellows, so that the deepest and most sombre colours are the farthest to the left. Let them go around the palette, leaving a space in the middle for mixing. And now proceed to the first painting.

The rule of laying on those colours first which are to represent lights, as in water colour painting, is entirely reversed when working in oil colours. The lights should be the last consideration.

It is impossible to lay down arbitrary rules for the composition of colour or, at least, to say that such a combination is right and another wrong. All we can do is to give illustrations. So we will assume that we have to paint a portrait of an old gentleman, with white hair, greyish white beard and moustache, slightly bald; face strong and rich in colour, inclining to florid; the head turned almost full towards us, with the light falling on that side of the face that we see most of, but lighting

directly, however, a good deal of the other side. This is a common style of portrait and one that often has to be painted.

Commence by mixing terre verte, brown madder, a little raw sienna and a very little light red. Let this mixture incline to a warm grey, and with it paint in those parts which are near the deepest markings of the face, such as the shadow below the eyes, the edge of the cheek by the whisker on the shaded side (and whenever you are working over a tolerably deep shadow on the photograph you may add a little flake white to render the colour more opaque, and so destroy the colour of the photograph) under the eyes. You may add a little yellow, as the shadow there is somewhat greenish in tone.

Now mix yellow ochre, flake white and light red and a little emerald green may be added to take away the crude intensity of the red and yellow, and with it paint carefully those parts which are between the extreme highlights and the greys of the middle tone. Let this combination incline to a weak, yellowish red.

Now mix flake white, emerald green, cobalt, and the least touch of light red and a very little burnt sienna and with it lay in the middle tints on the forehead and nose. These may be kept cool in colour. Now mix terre verte with burnt umber and flake white and a very little cobalt, and with it touch the flesh just where it meets the hair of the whisker, moustache, and the hair at the sides of the head; and as the subject is slightly bald, you may carry this cool grey around the top of the head. Now mix burnt umber, rose madder, and emerald green, making an opaque, warm colour, and with it paint broadly the outlines of the eyes. The lips may be touched with pure carmine; the upper lip may have a little light red

added to the carmine. You may now proceed to the lights. Mix yellow ochre, flake white, and the merest touch of light red, the whole forming a yellowish white; a little emerald green will not be amiss to keep it low in colour. With a broad, flat brush paint firmly first the lights on the forehead, next the cheek-bone, the nose, etc. The eye we will assume to be a bluish grey, and in painting this do not make it violet; very few people have eyes that colour. Antwerp blue, emerald green, and white will do; and remember that what is called the white of the eye cannot be painted with white, but must be made a bluish grey. The pupil may be touched with Antwerp blue and sepia. Endeavour to avoid the use of black anywhere. Next, with a little carmine and white, touch the inside corner of the eye and the cartilage of the nose.

You may now proceed to the coat, which we will assume to be black. Let us consider there are only three gradations of light and shades on it — lights, halftones and deep shadows. The halftones may be painted with a mixture of Vandyke brown and Antwerp blue, the whole forming a brown, not blue. The shadows can be touched with the same colour mixed, but inclining to blue; a little crimson lake may be added with advantage. The lights with the same colours in combination, but inclining to a bluish grey, so that we have the shadows and lights cool, and the middle tones warm. The middle tones will occupy a much greater space than both lights and shadows; and I may here say a word about the handling of the brush in draperies. If you are painting a heavy fold either in a curtain, a garment, or any woven material, let the direction of the stroke made by your brush be nearly at right angles with the fold, never down

its length; and in painting the halftones, do not let your colour go over the surface to be occupied by the lights; leave a space for them. All painting in oil should be mosaic, each touch occupying its own space and going no farther. M. Legros used to demonstrate the value of this system by painting portraits, using only the palette knife with which to lay on the colours, and the effect produced was magnificent. All the great portrait painters adopt the principle. The portrait of Thomas Carlyle by G. F. Watts, R.A., is a splendid example.

Having got so far, you may next rub in the background, which may consist of terre verte and sepia, inclining either to the green or to the brown. If you want to break it up at all, let that part you make darkest be on that side of the head which is in shadow, not close up to the head, but as if it were the shadow of the head thrown upon a wall at a little distance. Do not, for the sake of effect, paint your background darkest on the light side of the head, and lightest on the dark side. You will certainly get contrast, but it will be horribly vulgar. You may paint in the necktie, if it is visible, and collar, putting the shadows of the collar a warm grey, inclining to yellow. This will do for the first painting, which must be allowed to get quite dry before proceeding any further. When it is dry, which will be in two or three days if you have used much drying oil and longer if you have not, first sponge the painting with clean, cold water until the water will almost stand on it; dry it carefully with a clean cloth, and if there are any pieces of colour obtrusively prominent, they may be removed with the eraser.

You may now proceed to finish. You may strengthen

the colour on the cheeks by scumbling over it with a brush sparingly charged with the same colour as at first, but yellower or redder as your taste dictates. The greys of the face should be done next and here great care is necessary, so that they do not degenerate into dirt instead of shadows. The nose and forehead may be rubbed over with thin washes almost of light red, pink, madder and yellow ochre, very thin. The hair may be glazed with grey, inclining to yellow. The eyes may be touched up and lightened wherever they seem to need it. All shadows may be strengthened and remember the second painting is only to strengthen and correct the first. And now touch up the lights, strengthening them wherever they seem to need it, and do not use the softener in finishing a head; it may be used slightly in connecting the touches in the first painting, especially on the large surfaces, but not afterwards.

Glaze the coat with crimson lake, Antwerp blue and raw sienna, inclining to warm purple. Touch up the lights in a strong, brushy style and strengthen the background, making it deeper or lighter as you think fit. Do not let the outline of any part, either on the face or figure, be a hard, sharp line. Some photographers like it so, but it is utterly false in art and anyone with the slightest knowledge of the scientific laws of light and our physical powers of appreciating them, may demonstrate it for his own satisfaction if he wishes to.

Characteristics of Colour

I may here mention a few of the characteristics of colour which may possibly be new to some amateurs. The reason that some of the old time chromo-lithographs appeared so cheap and tawdry is not that the printers

did not know how to print them any better, but because they actually were cheap. The colours were crude and raw without any complementary colours to act as a foil.

A cloak or dress of any black material will have two, at least, distinct colours in its composition. Generally more if the lights are warm, the halftones may be expected cool, and the reverse. Black hair will often have the lights blue, in which case the halftones will be warm. I have seen a green robe painted with the lights a distinct light red, like the russet on a green apple. I have seen purple robes with the lights a decided orange, and so on; and this is correct in art. Of course it must not be taken too literally. All pigmentary colours have a very large amount of grey in them; but the only condition under which any object is quite colourless is when it is in total darkness — when all things are colourless. When anything is in the light, it takes to itself reflections from surrounding objects, which fact contains one of the elementary principles of harmony of colour.

The Russian Method of Applying Oil Colours

The method just described of applying oil paint with brushes to a carbon print on canvas is, without doubt, the most satisfactory method and the result — when the work has been done by a skilled and experienced artist — is most attractive. Modern craze for greater speed in production and lower prices have made it necessary to develop newer methods that are better adapted to meeting those demands and so there is a method of colouring photographic prints with oil colours by rubbing on the colours with a wad of cotton, a method that is very satisfactory and, at the same time, rapid and comparatively easy. There are complete sets on the market containing

all that is needed, put up in convenient boxes at a very reasonable price. Either Marshall's Transparent Oil Photo Colours or Roehrig's Photo Oil Colours can be strongly recommended. These sets include fifteen colours put up in tubes, the colours being: Flesh, Cheek, Lip, Carmine, Cadmium Yellow, Raw Sienna, Tree Green, Oxide Green, Blue, Cobalt Violet, Sepia, Verona Brown, Viridium, Cadmium Orange and Neutral Tint. There is also in the box a tube of medium, a bottle of dull finish varnish, a package of cotton, paper stumps and complete instructions for working. If you wish, you can buy the tubes of colours separately and there is a selection of about forty colours to choose from.

You can use a regular painter's palette on which to mix the colours, or you can use a piece of glass or opal, and in addition to this you will need one or two erasers — hard and soft — and a few small brushes for fine detail work.

Many people make stumps by covering the end of little wooden sticks with cotton and they use these for applying the colours, using a different one for each colour. You can use meat sticks or skewers — the little wooden sticks that are used by butchers for rolled roasts — and can apply the cotton very quickly and easily by taking a small wad of cotton in the left hand, laying the pointed end of the stick on the cotton and twisting the stick so that the cotton is wound tightly and evenly around the end of the stick. A number of these cotton stumps may be prepared beforehand so that there will be plenty of them available while you are working.

The medium that comes with the regular set of colours should be mixed with turpentine. Only the best quality turpentine should be used. You will find in the direc-

tion sheet full details as to how much turpentine should be used to dilute the medium.

The Kind of Print for Colouring

Any good print on practically any kind of paper may be coloured with oil colours, and as the colours are transparent and are applied in thin washes, the shadows and other details in the print will show through the colour. Therefore the print must be a good one, with good gradations and detail both in the shadows and in the highlights. *Either a black and white or a sepia print will* be suitable for colouring. If warm colours are to be used — reds, browns or orange — the sepia print will add depth and richness, but for a picture to be coloured with cooler colours, such as a snow scene, for example, a black and white print would be more suitable.

Unlike the method of colouring that has been described, in which the colours are applied with a brush, the colours used in the Russian method do not cover up and obliterate the photographic image. The photograph is tinted rather than painted, and yet there is a richness and depth to the colour that is very pleasing.

The print to be coloured may be of any size, but the method is best adapted to prints that are not too small, preferably eight by ten or larger. When a little experience has been gained in applying the colours, it will be found that even larger prints than eight by ten can be coloured evenly and fairly quickly with comparatively little trouble.

When you have selected the print that you want to colour and have decided what colours you want to use, you can proceed to set your palette. Along the upper edge of the palette or the sheet of glass squeeze out from

the colour tubes just a very little of each of the colours you expect to use. Of course the colours may be mixed and blended, either on the palette or by applying one colour over another.

Applying the Colours

Before applying colour to the print, you must prepare the print by rubbing a little medium over the entire surface. Take a wad of cotton and dip it in the medium that has been diluted with turpentine according to the instructions, and then rub it over the entire print. Wait a few minutes and then take a piece of clean, lintless cotton cloth and rub off the surplus medium, rubbing the print down till it appears to he dry. Now the print is ready for the colour and the way the colour is applied is as follows: Take one of the stumps that you have prepared by wrapping cotton around the end of meat sticks, dip it in the colour that you want and rub a little colour more or less roughly over the part where that colour is to be applied. Then, with a clean cotton stump rub over this rough application of colour and even it up. When you have done this once, you will see how it may be done and you will realize how simple and easy this method of colouring really is. You do not need to be very careful about keeping the colour within the boundaries where it is to be, for any colour that overlaps onto a part where it ought not to be can very easily be rubbed off with a wad of clean cotton, or if that does not remove it completely, just a touch of medium applied with the cotton will remove the colour.

Colours can be blended, just like transparent water colours, by applying one colour over another. The colours are transparent, so that the shading and detail

in the photograph show through, giving shadow and halftones to the picture. You can deepen the shadows a little if that is necessary, but you do not have to work them up entirely with colour.

Portraits

In colouring portraits, try to get a good flesh tint. For light complexions sometimes a touch of yellow may be added to the regular flesh tint to make it a little lighter. The colour on the cheeks is added after the flesh tints have been applied to the face. Eyes and other details will have to be coloured with a brush.

Landscapes

Landscape pictures can be coloured very quickly and effectively by this method. As a rule, tbe sky should be coloured first, and the colour can be rubbed all over the sky portion of the picture. Then, if there are any clouds, the colour can be taken off the clouds, leaving them white. If there is water in which the sky is reflected this should be coloured next. Then tbe green in grass and foliage and other colours for tree trunks, fences, houses, etc. Small items like flowers in the foreground should be put in with a brush.

If you do not care to use the photo oil colours that are put up in sets, you can use regular oil paints such as artists use. Those manufactured by Winsor and Newton, or Devoe or any other good maker will be found to be entirely satisfactory. The megilp that artists use is about the same as the medium that is supplied with the oil colour sets and can be used instead of the regular medium. After the paint is thoroughly dry, another application of megilp or medium will impart a little more

brilliancy to the colours. Some colourists use the Nepera Waxing Solution, a preparation manufactured by Eastman Kodak Company for bringing out detail and adding a luster to photographic prints.

Working up Enlargements in Black and White and Coloured Crayons

Enlargements for this treatment should be on paper more or less rough, according to size, and especially according to the size of the head. Conté pencils, both black and white, A. W. Faber "Castell" Polychromos Pencils and other varieties may be used. It is not necessary to confine oneself to black and white and sepia, for crayons can be obtained in all colours and the enlargement may be worked up in any colour or in several colours.

The background may be rubbed in with powdered crayon, white faces modified and the highlights picked out, as previously described. Sometimes the head alone is printed and the bust or figure left to be drawn in with crayon. The stump and the fingers all play their part in such work as this which admits of considerable individuality in treatment. The pencils, as a rule, should be used in a free and sketchy manner. Some free and decided, but not too hard, hatching and cross hatching will help to give artistic effect to the background. Certain unobtrusive touches with the brush, where required, will help without affecting the general impression of "crayon" work; the same may be said of the air brush, which may also be used in conjunction with pencil and brush.

Some experience of crayon drawing would be an antecedent condition of good work of this kind. In a still

larger degree this remark would apply to coloured crayon work which, as a rule, would be practically impossible, as would good work in oils, without a preparatory art training. Artists who have had such a training should not have much difficulty in doing work on a basis wholly or in part photographic.

Whether they work on a photographic print or enlargement that is dark or light in the printing is a matter that must be left to their discretion and to the method that is used in the working up or colouring. When the photographic print is to be coloured with transparent water colours or aniline dyes, or with oil colours applied by the Russian method of rubbing on the colour with a wad of cotton, a fully printed photograph is needed, so that the details and gradations will show properly through the colour, but for working up with crayon or with oil paint applied with a brush, a light print may be used and the details and gradations put in with the crayon or paint. The lighter the print, the more the artist will have to create and the more will his ability be put to the test to preserve the likeness and the character of the subject, as they are insistently required to be preserved from the photographic standpoint.

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